

## Decision on IDNO/DNO boundary equipment and which parties should fund this equipment

**Document type:** Decision

**Ref:** 29/10

**Date of publication:** 2 March 2010

**Target audience:** Electricity distributors, HSE, Elexon and other interested parties

### Overview:

Independent network operators (IDNOs) compete with the incumbent monopoly owners of electricity distribution assets (DNOs) to build and adopt network extensions. Through competition, IDNOs are potentially able to provide faster connection to the network for customers and generators and offer innovative services.

On 30 October 2009 we consulted on the funding arrangements for equipment to measure the flows of electricity between the DNO and IDNO networks. The consultation reassessed our decision of July 2005 that stated that it was reasonable that this equipment should be funded by IDNOs.

In the October consultation we stated that we considered that the DNO requirement for almost universal metering of flows between the boundary using Half Hourly metering equipment was a discriminate and disproportionate response to measuring electrical flows between DNO and IDNO networks. In the consultation we set out a minded to position that more proportionate arrangements for measuring flows over the boundary would be achieved if the DNO funded the equipment.

This document sets out our decision on the funding of equipment to measure the flow of electricity between DNO and IDNO networks. From 1 April 2010 our starting point for any connections dispute will be that the boundary measurement equipment should be funded by the DNO.

**Contact name and details:** Mathieu Pearson, Senior Manager, Local Grids

**Tel:** 020 7901 7294

**Email:** [mathieu.pearson@ofgem.gov.uk](mailto:mathieu.pearson@ofgem.gov.uk)

**Team:** Local Grids

## Context

IDNOs have complained that competition in electricity distribution is developing slowly. They have cited a number of reasons, including:

- the lack of cost reflective access charges from DNOs for the use by IDNOs of their upstream network; and
- that IDNOs have to bear the costs of Half Hourly meters at the boundary between their network and the DNOs'. DNOs do not install these boundary meters on their own networks in similar circumstances.

IDNO specific charges have been introduced, and will be further refined with the introduction of the Common Distribution Charging Methodology (CDCM), which comes into force on 1 April. The CDCM requires DNOs to bill IDNOs on a portfolio basis. This means IDNOs will be billed according to the capacity/commodity characteristics of each customer they have connected to their networks rather than the aggregate characteristics of the sites that they have adopted. Changes to the balancing and settlement code (BSC) have recently been approved to enable portfolio billing. One impact of this modification is that DNOs do not need to measure flows across the boundary between itself and each IDNO site in order to bill IDNOs

This decision document and our 30 October 2009 consultation on boundary metering reviews the policy we have had in place since July 2005 on funding of boundary metering. The 2005 policy stated that IDNOs should fund proportionate boundary metering equipment where required. In the majority of cases, the DNOs interpretation of this policy has been to install Half Hourly boundary metering equipment at IDNO sites.

## Associated Documents

October 2009 consultation document 132/09 on metering at the boundary between DNOs and IDNOs, and who should fund it -  
<http://www.ofgem.gov.uk/Networks/ElecDist/Policy/IDNOs/Documents1/Final%20boundary%20metering%20consultation.pdf>

July 2005 decision document 176/05 on the regulation of independent electricity operators -  
<http://www.ofgem.gov.uk/Networks/ElecDist/Policy/IDNOs/Documents1/11186-17605.pdf>

December 2009 Decision on CDCM conditional approvals -  
<http://www.ofgem.gov.uk/Networks/ElecDist/Policy/DistChrgs/Documents1/Decision%20on%20conditional%20approvals%20Dec%202009.pdf>

## Table of Contents

<b>Summary .....</b>	<b>1</b>
<b>1. Introduction and background .....</b>	<b>3</b>
<b>2. Summary of responses .....</b>	<b>6</b>
Overview .....	6
Consultation responses .....	6
Ofgem response .....	7
Existing arrangements .....	7
Consultation responses .....	7
Ofgem response .....	8
ESQCR obligations .....	9
Consultation responses .....	9
Ofgem response .....	9
Benefits of boundary metering and funding .....	10
Consultation responses .....	10
Ofgem response .....	10
Analysis of potential benefits of boundary metering .....	12
Consultation responses .....	12
Ofgem response .....	13
Other Issues .....	13
Consultation responses .....	13
Ofgem response .....	14
Summary .....	14
<b>3. Our Decision .....</b>	<b>15</b>
<b>Appendices .....</b>	<b>18</b>
<b>Appendix 1 – The Authority’s Powers and Duties .....</b>	<b>20</b>
<b>Appendix 2 - Glossary.....</b>	<b>22</b>
<b>Appendix 3 - Feedback Questionnaire .....</b>	<b>25</b>

## Summary

Independent network operators (IDNOs) compete with the incumbent monopoly owners of electricity distribution assets (DNOs) to build and adopt network extensions. IDNOs are potentially able to compete against the DNOs by providing faster connection to the network for customers and generators and by offering innovative services.

One of the consequences of introducing competition in the last mile of distribution is that it requires some assessment or measurement of the electrical flows across the network boundary. This is required in order to calculate the charges which the downstream distributor owes to the upstream incumbent for use of their network and also to allow the upstream incumbent to accurately report the losses on their network as part of their losses incentive. In July 2005, we stated that it was important for electrical flows across ownership boundaries to be measured accurately. We noted that it was up to DNOs and IDNOs to agree the most cost effective solution to measure these flows and that where this solution triggered a cost, that the IDNOs should pay.

IDNOs have complained about the DNO interpretation of our policy. DNOs have almost universally installed boundary metering equipment at the boundary to IDNO sites connected to their networks. DNOs do not routinely install metering at equivalent points on their own networks. This interpretation places a cost on IDNOs of between £400-£700 per site per year which is not incurred by DNOs (This can be equivalent to more than 50% of the IDNO revenues at a typical site).

On 30 October 2009 we consulted on the funding arrangements for equipment to measure the flows of electricity between the DNO and IDNO networks and asked whether it was appropriate for us to change our policy to require DNOs to fund the cost of any boundary metering installed. In the October consultation we stated that we considered that the DNO requirement for almost universal metering of flows between DNO and IDNO networks using Half Hourly metering equipment may be a discriminate and disproportionate response to the need to measure electricity flows. In the consultation we set out a minded to position that more proportionate arrangements for measuring flows over the boundary would be achieved if the DNO funded the equipment. In this decision document we confirm this view. Therefore from 1 April this year, our starting point for any connection dispute between DNOs and IDNOs will be that equipment for measuring flows between DNO and IDNO networks should be funded by the DNO.

This decision was based on our analysis, outlined in the consultation document, that indicated that universal Half Hourly boundary metering, is very unlikely to secure benefits sufficient to outweigh the costs. Furthermore our view was the major benefit of Half Hourly boundary metering lay in the accurate reporting of losses, and that this benefit accrued mainly to the DNOs via their losses incentive mechanism. Having reviewed the consultation responses we see no reason to change that view.

Under the new approach it will be for DNOs to determine whether and how to measure flows at the boundary based on what they consider to be the best value for money approach given their incentives, and particularly the losses incentive. In the

potential absence of boundary metering at some sites we consider it reasonable that DNOs might require IDNOs to provide details of the specifications of the equipment that they have installed at IDNO sites connected to their networks.

Most DNOs argued that they should receive funding under their price control for any boundary meters they choose to install. We accept that in principle there may be a minimum level of boundary metering that an efficiently run DNO would need to install. However, given the way DNOs have implemented the existing policy it is not possible to robustly determine what that efficient level might be. Therefore, and without providing any guarantee that revenue would be allowed, DNOs will be able to make the case at DPCR6 for an efficient level of future costs for measuring the flows at the boundary. However, given the developments in smart metering and the potential for wider use of network metering for other network management reasons, it may in practice turn out that any separate consideration of boundary metering for IDNOs is overtaken by other considerations that influence the installation of meters at a range of points on the network to secure other benefits.

Clearly the DNO will need to have a measure of flows of electricity to IDNO sites for billing purposes. The proposed approach to billing IDNOs in the recently approved DNO common charging methodology should provide DNOs with a mechanism for doing this. The CDCM requires DNO to bill IDNOs on a portfolio basis. This means they will be billed according to the capacity/commodity characteristics of each customer they have connected to their networks rather than the aggregate characteristics of the sites that they have adopted. To enable portfolio billing a modification (P246) to the BSC has recently been approved. This modification enables Elexon to provide settlement data from customers connected to IDNO networks to the upstream DNO for the purpose of calculating use of system (UoS) charges. One impact of this modification is that DNOs do not need to measure flows across the boundary between itself and individual IDNO sites in order to bill IDNOs. Portfolio billing will be introduced from 1 April 2010. We therefore consider that the change in policy on boundary metering will come into force from this date

In our October consultation we suggested that if the portfolio billing solution that was put in place required the functionality to reconcile between settlement data and recorded flow by boundary meters then it would seem appropriate that the DNOs pay for the costs of the billing solution. However, we have since noted that the reconciliation function of the billing system only marginally increases the complexity of the proposed system and that reconciliation may be necessary if a sample of boundary meters are to be used. If DNOs and IDNOs agree that some sample of metering and reconciliation is required, then it would seem appropriate that the associated costs of the billing system are split between DNOs and IDNOs on a per licensee basis.

In addition to the costs of the billing system there is some uncertainty regarding whether a central agent will be used in the billing process, and if so, what the exact role of this agent would be and what the costs of this agent will be. As with our view on the costs of the billing system we would expect that the cost of any agent be divided amongst the DNOs/IDNO taking into account to which of these parties the balance of benefits of the agent accrue.

## 1. Introduction and background

1.1. Changes to the Electricity Act (1989) by the Utilities Act (2000) introduced distribution of electricity as a separate activity from supply of electricity which required its own authorisation and licence. The Utilities Act (2000) also permitted IDNOs to compete with incumbent DNOs to own and operate new electricity distribution networks. These networks are predominately network extensions connected to the existing distribution network, typically new domestic housing developments. IDNOs can potentially provide benefits to customers in terms of innovation and improved customer service. Where IDNOs own and operate the networks for these new housing developments, they are reliant upon the host DNO to provide them with a connection to the distribution system. The host DNO levies use of system charges on the IDNO to reflect the costs it incurs in transporting electricity from the transmission system to the IDNO boundary.

1.2. In July 2004 Ofgem consulted on the appropriate regulatory framework for independent electricity networks<sup>1</sup>. In January 2005 Ofgem published its initial proposals for this regulatory framework<sup>2</sup> prior to taking a decision in July 2005<sup>3</sup>. The initial proposals and decision document considered the need for boundary metering and its alternatives. Our July 2005 decision concluded that there were a number of options (particularly at low voltage), including alternatives to boundary metering, for measuring the electrical flows between distribution networks and that it was up to industry to work together to agree which option would be appropriate for different scenarios. We also stated that where there was a cost related to the equipment which is put in place at the boundary, then this cost should be borne by the IDNO. This decision was in effect a minded to position on the principles that would be applied if Ofgem received a request to determine a dispute between a DNO and IDNO regarding a connection agreement.

1.3. The cost of leasing and operating boundary metering can be £400-£700 a year (excluding housing costs) which is a significant cost for IDNOs. IDNOs are subject to a relative price control (RPC) by which they are unable to charge suppliers of domestic customers any more for use of system (UoS) than the host DNO. IDNOs also have charging methodologies approved by Ofgem which state that they will replicate host DNO UoS charges for all customer classes. DNOs do not currently place meters on the 'last mile' of their own network. Therefore, the revenue which IDNOs recover through RPC does not include the costs of boundary metering which DNOs levy on IDNOs. Consequently, IDNOs fund these boundary metering costs directly

---

1 [http://www.ofgem.gov.uk/Networks/ElecDist/Policy/IDNOs/Documents1/7817-18004\\_IDNO.pdf](http://www.ofgem.gov.uk/Networks/ElecDist/Policy/IDNOs/Documents1/7817-18004_IDNO.pdf)

2 <http://www.ofgem.gov.uk/Networks/ElecDist/Policy/IDNOs/Documents1/9500-1805.pdf>

3 <http://www.ofgem.gov.uk/Networks/ElecDist/Policy/IDNOs/Documents1/11186-17605.pdf>

out of the net income they receive under RPC<sup>4</sup>. Equally, end customers on DNO and IDNO networks are currently protected from bearing the metering costs associated from the introduction of competition in distribution.

1.4. In July 2008 Ofgem started facilitating an IDNO/DNO working group to progress the development of specific IDNO UoS charges. As part of this work it was suggested that in practice Half Hourly boundary meters were being required in most circumstances at the DNO/IDNO boundary. IDNOs have consistently claimed that this does not facilitate competition in distribution and have stated that boundary meters should not be required where the DNO/IDNO boundary is on the LV network because the costs are disproportionate.

1.5. In August 2009 Ofgem issued an information request to DNOs and IDNOs. This request asked for the following information:

- The type of boundary equipment installed at EHV, HV, large LV and small LV IDNO sites.
- The function that this boundary equipment is able to provide, e.g. Half Hourly meter, communication features for remote reading, factor in for losses.
- The reasons why this equipment is required and why the functional capability of this equipment is required at each voltage level.
- The typical ongoing annual cost levied on IDNOs for maintaining the boundary equipment at each voltage level.
- The typical up-front procurement cost levied on the IDNO for procuring the boundary equipment at each voltage level.

1.6. In October 2009 Ofgem consulted on changing its policy regarding boundary equipment between DNOs and IDNOs, and who should fund the equipment. Ofgem stated that its position was that a requirement for universal boundary metering is discriminatory and disproportionate. The consultation sought views on the evidence presented to support Ofgem's "minded to" policy. In particular, we asked DNOs and IDNOs to provide evidence on the costs and benefits of the current approach of universal Half Hourly boundary metering, and the alternatives to universal Half Hourly boundary metering.

1.7. The remaining sections of this decision cover the following issues.

---

<sup>4</sup> By net income we refer to the difference between the 'all the way' income IDNOs recover from end users minus the boundary charge it has to pay the DNO for the upstream distribution system.

- A summary of responses to our consultation document together with Ofgem's response to these comments is set out in Chapter 2.
- We explain our final decision and the timing of its implementation in Chapter 3.



## 2. Summary of responses

### Chapter Summary

This chapter sets out a summary of the responses to our consultation and Ofgem's response to the comments.

### Overview

2.1. Our October consultation document set out an estimate of the costs the boundary metering imposes on IDNOs over a 40 year life cycle<sup>5</sup>. We have included this analysis in appendix 1 to this decision document as it demonstrates that boundary metering can impose costs which equate to over 50% of the revenue which IDNOs can earn from a typical development over 40 years. We challenged respondents to our consultation to outline why this was not discriminatory and restrictive to competition.

### Consultation responses

2.2. We received 12 responses to the consultation, with 7 responses from DNOs, 4 responses from IDNOs and a response from National Grid. There were a mixed range of views amongst the DNOs. Three of the DNOs (CN, EDF and ENW) broadly supported our proposal, although ENW in particular, disagreed with many of the arguments used in the consultation to support our proposal. SSE and WPD accepted a number of the arguments that we had made to support our proposed approach, but had a number of concerns about the implementation of the proposal, which are discussed further below. CE and SP strongly disagreed with our proposal and set out a range of concerns about our analysis and arguments. A number of the DNOs argued that if they were required to pay for boundary metering then they should be allowed to recover the costs under their price control.

2.3. All of the IDNOs supported our proposed approach. A number of the IDNOs noted that the current requirements from DNOs to install boundary meters at almost all sites were often identified by developers as a reason not to choose an IDNO to connect and operate a new network.

---

<sup>5</sup> This was included in table 1.3 on page 8 of the consultation:

<http://www.ofgem.gov.uk/Networks/ElecDist/Policy/IDNOs/Documents1/Final%20boundary%20metering%20consultation.pdf>

2.4. National Grid noted that there may be lessons that can be learnt from the experience of IGTs in gas, and suggested that the absence of boundary metering in gas had led to a range of difficulties.

### **Ofgem response**

2.5. As discussed in the remainder of this chapter and the next chapter, while we do not consider that any of the comments made by respondents are such that we should change our proposed policy from the consultation, we recognise that some of the issues raised, particularly by DNOs, need further consideration in the context of implementing our proposal. We do not consider that the two DNOs who opposed our proposals demonstrated that the current position or other alternatives that they proposed were likely to lead to better outcomes for customers, and in particular a more cost effective and non-discriminatory outcome.

2.6. Ofgem continues to believe that there is very strong evidence that the implementation by DNOs of the current policy has led to a disproportionately costly approach that cannot reasonably be justified when compared to the potential benefits of universal Half Hourly boundary metering. These costs are outlined in appendix 1. The analysis presented in our October consultation suggested that to justify boundary metering the losses at IDNO sites would on average have to be reduced by at least 3.42%. While there is evidence that some DNOs have considered alternative approaches, in general the DNOs have not had an incentive under the current arrangements to investigate alternative and potentially more cost effective options. While Ofgem recognises that IDNOs gain some benefits from the accurate measurement of flows at the boundary, Ofgem continues to believe that DNOs obtain the majority of the benefits, including through their losses incentive, and therefore, they are best placed to decide the most cost effective approach to the measurement of flows at the boundary.

2.7. We discuss in the subsequent sections the more detailed comments made by respondents.

## **Existing arrangements**

### **Consultation responses**

2.8. A number of DNOs argued that we had not appropriately described their existing arrangements for boundary metering. In particular, SP explained that it agrees appropriate metering arrangements with the IDNO for each connection. It went on to describe work it had undertaken with Energetics to develop a solution where a HV IDNO connection is metered at LV level. It considered that this demonstrated that more cost effective and innovative solutions could be developed under the current arrangements. Energetics' response criticised the charges that SP levied for metering, stating that it had only very recently fallen to the level stated in our consultation. SP recognised that the introduction of the CDCM and portfolio billing was an opportunity to review the type of metering that was required to be installed. SSE explained that for IDNO sites with a capacity below 70kVa they would not wish

to install boundary meters and considered that this *de minimis* level should be rolled out across industry.

2.9. A number of IDNOs noted that they were often obliged to accept the DNOs' data retrieval arrangements because alternatives were not compatible with the DNO's systems. This increased the costs they faced.

2.10. A number of DNOs noted that the "last resort" DNO metering charges identified in our consultation were rarely applied because IDNOs almost always sourced their own meters.

2.11. SP was concerned that our analysis of the costs of boundary meters did not recognise the potentially additional costs of manually reading lower specification meters. SP also considered the costs of housing meters quoted by IDNOs seemed excessive. WPD commented that the costs we outlined of accommodating the meter are likely to be less than £100 where the meter is at the pillar. Although they agreed that costs will be substantially higher at the link box due to the need for street side housing.

### **Ofgem response**

2.12. We recognise that not all DNOs implement requirements for boundary meters in the same way. This is partly reflected by the different charges levied, but also the more innovative approaches such as that described by SP. However, the information request we issued prior to our consultation and the responses to the consultation confirmed that most DNOs for most IDNO networks require Half Hourly metering to be installed and paid for by the IDNO. As the analysis in our consultation document showed, this does not appear to be a cost effective approach given the significant reduction in losses at IDNO sites that would be required to justify it. We also have concerns that this approach may be discriminatory as compared to the approach DNOs adopt for their own networks (i.e. DNO do not routinely install meters at equivalent point on their own networks).

2.13. We accept that most IDNOs will not in practice pay the "last resort" charges levied by the DNOs, and we included alternative cost levels based on those indicated by IDNOs for the analysis in our consultation. Nevertheless, it remains unclear to us why there is such a large variation in DNO charges and why in some cases they are much higher than the costs for IDNOs of purchasing similar meters. As discussed below we have used the best available information about the costs of housing meters. It remains our view that the costs of boundary metering represents a substantial cost to IDNOs, even before some of the additional costs associated with boundary metering identified in the consultation (such as the cost of accommodating the meter at substations) are taken into account. This cost has the potential to reduce the net income available to IDNOs and consequently reduce their ability to compete with DNOs (who do not have to fund similar costs) to adopt new networks.

## ESQCR obligations

### Consultation responses

2.14. CE explained in its response that it considered the universal installation of Half Hourly boundary meters to be an important way in which it ensured that it complied with its obligations under the ESQCR requirements. In particular, CE identified regulations 3 and 5 of the ESQCR regarding ensuring that assets are sufficient for the purposes and circumstances in which they are used, and the requirement to inspect assets with sufficient frequency to meet DNOs general obligations under the ESQCR. CE argued that it complied with these obligations through undertaking general load surveys that included using information from boundary meters. SP also raised concerns that Ofgem's proposal did not recognise that the legal, commercial and operational responsibilities of different parties at the boundary between networks, and that it was normal practice for meters to be installed at the boundary.

2.15. CN explained that it did not charge IDNOs for the Half Hourly boundary meters that it installed because it recognised that the meters were at a higher specification than would ordinarily be required given the network characteristics. It installed the meters to monitor the flow rate at IDNO networks. CN also indicated that there were often difficulties for interacting with its system when the IDNO provided data retrieval services. CN agreed that the DNO should decide whether and what form of metering is required, although they considered in due course it might be appropriate for the costs to be included in the general cost base of the DNOs.

2.16. An IDNO said that following the introduction of portfolio billing DNOs would have access to consumption information for each network, which should remove any concerns about the need for boundary metering to meet safety obligations.

### Ofgem response

2.17. Ofgem recognises the importance of DNOs complying with the ESQCR and having the necessary resources and options to do this. The portfolio billing system being developed by the DCUSA working group can have the capability of identifying the consumption of individual IDNO sites. This capability would allow DNOs to monitor the loading demands placed on their network and use such information to make efficient investment decisions. While recognising CE and SP's concerns, we would also note that none of the other DNOs raised this issue, suggesting that they are confident that they can comply with the ESQCR under the new arrangements. Furthermore, SSE specifically noted that it did not require boundary meters to be installed for smaller IDNO networks. If a DNO considered that the only way to comply with the ESQCR was to install Half Hourly boundary meters for all IDNO networks in the future then it can do this within Ofgem's new policy, but if it wanted additional funding it would need to make the case to us at the next price control review as to why this was the most efficient way to meet the ESQCR obligations.

## Benefits of boundary metering and funding

### Consultation responses

2.18. A number of DNOs identified additional benefits of boundary metering that they believed had not been identified in our consultation. A number of DNOs suggested that IDNOs would benefit through more accurate billing, SP mentioned that they had provided to us (prior to the consultation) with data which showed that the difference between settlement data (on which IDNO would be billed under portfolio billing) and boundary metered data was up to 10%. CE and SSE considered that boundary meters helped DNOs become generally more efficient and could help reconcile the new portfolio billing system, including detecting theft and unmetered supplies. CE also noted potential benefits through more cost reflective charging and compliance with ESQCR regulations (discussed above). CE considered that reducing losses was a shared benefit with IDNOs. SP also considered that the future benefits of more active network management and meeting the challenges arising from the penetration of micro-generation and electric vehicles would accrue to IDNOs.

2.19. EDF and SP believed that IDNO's would have no incentive to reduce losses if our proposals were introduced and particularly after portfolio billing is introduced. SP argued that there was already evidence that losses on IDNO networks would be higher than on DNO networks because they install smaller cables than the host DNO, install higher loss transformers and choose HV connections to optimise their margins. WPD highlight the cost incentive on IDNOs to procure standard transformers rather than low loss equipment which is £7000 more expensive. Similarly they highlight that the LV cables can make a difference to the losses on the network and that if no boundary metering is in place, IDNOs have no incentive to invest in loss saving equipment.

2.20. The IDNO's argued that there was no evidence that losses on their networks were any higher than those on DNO networks. Some IDNOs argued that losses could on average be lower because their networks were newer than DNO networks, so would on average have lower loss equipment.

2.21. A number of DNOs were also concerned that our consultation implied that if a benefit flowed to DNOs it should be funded entirely by shareholders. Most of the DNOs, including those who agreed with our overall policy intent argued that the costs of some or all of the meters installed to measure flows at the boundary should be included in price control allowances now or in the future. An IDNO argued that they should receive compensation for the historical costs incurred for boundary metering.

### Ofgem response

2.22. Our consultation recognised that there were a number of potential benefits to boundary metering, but considered that the more accurate recording of losses, which benefits DNOs through its losses incentive, was likely to be the most significant. We recognised in our consultation that boundary metering could contribute to improved detection of theft and unmetered supplies. We considered that many of the benefits

suggested by the DNO relate to improving the efficiency of their networks and that the arguments would apply equally if the site had been adopted by the DNO itself rather than the IDNO. If DNOs consider that the installation of boundary meters contributes to an improvement in their efficiency then they have an incentive under the price control to install the meters and obtain the benefits through lower costs and higher profits.

2.23. Some DNOs correctly pointed out that IDNO would benefit from increased accuracy of billing. However, we consider that these benefits are fairly minor. When drafting the consultation we did consider the data submitted by SP (which consisted of monthly boundary metered data and customer settlement data over a several year period). Our analysis of the data suggested that whilst, as SP correctly point out, there can be large differences between the settlement data and boundary metered data the average difference was much less than the 10% mentioned by SP (circa. 3%). Furthermore given the sample size, the variability in the data the difference was not statistically different from zero, even before a reasonable estimate of the likely losses between the boundary and end customers was taken into account. In addition the true scale of the difference was likely to be exaggerated to an extent because the final run of settlement data was not used across all sites and sample months.

2.24. When IDNO billing is based on the recorded settlement data from end customers (one way of implementing portfolio billing) then the IDNO has a limited direct incentive to reduce losses or register customers on its networks. However, even without a direct incentive the IDNO will still have a licence and a legal obligations (in particular with regard to theft) to minimise losses. Boundary meters could be used to provide IDNOs with a direct incentive to reduce losses. However we consider that the current policy, with IDNOs obliged to fund the provision of boundary metering, and which has resulted in HH boundary metering equipment being installed at IDNO sites, is an inefficient mechanism for providing IDNOs with a direct incentive to reduce losses.

2.25. When our decision to allow DNOs to decide the best way to measure flows at the boundary, and pay the associated costs, is implemented, we consider it will be reasonable for DNOs to require IDNOs to provide details of the specification of equipment that they have installed at sites that they have adopted. We consider that this could be done within the bilateral connection agreement, although we would expect DNOs and IDNOs to agree the best way to provide such information. This would allow the IDNOs to back up the claims they make in their responses that they install the same equipment as DNOs and allow validation of whether standard line loss factors classes apply to IDNO sites. Furthermore, it will allow DNOs to be more confident in metering just a sample of sites and using the data obtained at these sites for non metered sites which use similar equipment.

2.26. Ofgem's approach to considering this issue does not imply that DNO's shareholders should fund any measures that bring benefits to DNOs. For boundary meters the largest benefit to DNOs is likely to arise through more accurate losses measurement that feeds through into better outcomes for DNOs under the losses incentive. We do not consider that a further specific allowance for boundary meters

should be made in this price control, however will consider the funding of efficient metering costs at DCPR6.

2.27. We recognise that on an ongoing basis there may be an argument that there is a minimum or base level of boundary measurement equipment that is required to ensure that DNOs and IDNOs interact effectively. However, given that the current approaches of most DNOs seem to be wholly disproportionate to achieving these aims and other benefits of boundary metering, we are not in a position to robustly determine whether such a minimum level exists and what its costs might be.

2.28. We will monitor how arrangements bed down following this decision, and how DNOs react to the better incentives they face, and potentially in DPCR6 could fund on a forward looking basis, some minimum level of efficient boundary measurement equipment. We consider that DNOs' actions over the next five years may reveal more robustly what constitutes efficient arrangements. However, by raising this possibility we are not providing a guarantee that DNOs or any particular DNO will receive any revenue for boundary measurement equipment at DPCR6. Furthermore, over the next five years it is probable that there will be wider developments with regard to the installation of meters on DNO networks to facilitate environmental objectives and more active network management, which over takes separate consideration of the costs of boundary metering.

2.29. While we are concerned that DNOs have implemented the current arrangements in an excessive costly manner, we also recognise that the DNOs were acting within the existing policy. Therefore, we do not consider that it would be appropriate for IDNOs to receive any "compensation" for previous boundary metering charges. Our new policy is forward looking. However when considering what to do with existing meters DNO should consider how they fit with an efficient programme of boundary metering.

## **Analysis of potential benefits of boundary metering**

### **Consultation responses**

2.30. SP challenged a number of aspects of our quantitative analysis of the potential benefits of boundary metering. In particular, SP argued that:

- The presumption that a majority of the sites are LV is not appropriate to its area, where around 50% of the sites are HV where losses will be higher than for LV connected sites.
- DNO "last resort" charges for boundary meters are not an appropriate benchmark for the analysis as they are rarely paid by IDNOs.
- The average site consumption used for the analysis equates to less than 30 plots per site which was larger than the "average" quoted in the document of 50 plots.
- Ofgem has not taken account of the difference in asset life between the electronic and non-electronic components of metering, which typically have materially different lives (10-15 years compared to 40 years).
- The costs for housing meters provided by IDNOs appeared to be quite large.

**Ofgem response**

2.31. We recognise that there are different assumptions that could be made for the analysis, but we consider for a plausible range of assumptions the overall conclusion, that universal Half Hourly metering is unlikely to be proportionate to the benefits of more accurate losses measurement will remain unchanged. We remain convinced that our analysis set out in the October consultation is correct and that additional losses at IDNO sites would need to be between 3% and 8% to justify the cost of HH metering at all IDNO/DNO boundaries.

2.32. Some other points that we would note with regard to our analysis are:

- The use of a 50 plots site in a number of the consultation examples was suggested to be "typical" rather than necessarily an average.
- We consider that the asset life used for the meters was a reasonable estimate and that in many cases the costs were per year leasing charges which are not impacted by average life assumptions.
- We have used the best available information on meter housing costs provided by the IDNOs and cross checked these estimates with a provider of metering equipment, and we consider the estimates of IDNO metering costs to be reasonable.

2.33. We also recognise that some DNO areas have a different mix of LV and HV sites to others, but based on the overall portfolio information we have received from IDNOs understand that a significant majority of sites across the country are LV connected. We understand SP's point that losses at HV connected IDNO sites will be greater than at LV. However our analysis refers to losses additional to those that would have occurred anyway had the site been operated by the DNO. We consider that the additional losses required at portfolio of IDNO sites, including both HV and LV connections, would not justify universal HH boundary metering of these sites. The decision we have set out states that it is for the DNO to determine what constitutes an efficient boundary metering policy, and if they can evidence that their policy is efficient then funding for boundary metering will be considered as part of DPCR6.

**Other Issues****Consultation responses**

2.34. ENW argued that prior to the introduction of portfolio billing flows at the boundary have to be measured to allow for accurate billing. Once portfolio billing is in place ENW were comfortable that boundary metering was no longer required. A number of IDNOs also argued that following the introduction of portfolio billing there was no need for boundary metering.

2.35. A number of DNOs did not consider it was appropriate that they should pay the full costs of any portfolio billing system that incorporated reconciliation to boundary



meters. DNOs argued that most of the costs should be shared with IDNOs, and if they were responsible solely for any aspects of the costs it would be the incremental costs of the additional functionality.

2.36. From industry meetings about potential changes to DCUSA and BSC, and the responses to the consultation, it is clear that DNOs are uncertain how a sample of metered sites will work under a portfolio billing system. DNOs are concerned that they will have to fund universal boundary metering under the current specification of the portfolio billing system. Furthermore, DNOs have noted that under the current losses incentive, they can only report billed units exiting their system.

### **Ofgem response**

2.37. Some of the facilities which DNOs can use for the efficient operation of their networks are only available once a robust portfolio billing solution (including the functionality to reconcile to at least a sample of boundary meters) is in place. Although prior to portfolio billing it is not clear that Half Hourly boundary meters are required.

2.38. We are confident that DNOs will be able to implement a portfolio billing system from 1 April in order to comply with their obligations under the CDCM. Whilst the system initially installed for portfolio billing will not be able to fully reconcile to boundary metering, we consider that from 1 April there will be a clear alternative to universal Half Hourly boundary metering.

2.39. Participation in the DCUSA working group and greater industry understanding of the potential portfolio billing system has demonstrated that inclusion in the billing system of the facility to reconcile to boundary metering and the incremental costs of this are uncertain. We would indicate that the funding of the system should reflect where the benefits accruing from it lie.

2.40. We understand that the existing design can be easily adapted to allow a sample of meters to provide a series of standard reconciliation factors to be used on similar IDNO sites which are unmetered. DNOs will need to decide, based on their own views about an appropriate sample size, how many sites need to be metered or have flows measured in another way. The provision of information by IDNOs about the nature of the equipment they have installed will help DNOs make this decision.

### **Summary**

2.41. Having considered the responses to our consultation, we do not consider that any points have been raised that lead us to substantively change the proposal from our consultation. However we do note that we would consider funding efficient boundary metering at DPCR6. We confirm in the next section our decision and its implementation.

## 3. Our Decision

### Chapter Summary

This chapter explains our decision about future policy on the equipment to measure flows at the boundary between DNO and IDNO networks.

3.1. This decision document confirms the proposal in our October 2009 consultation to change Ofgem's policy regarding the regulatory treatment of metering at the boundary between DNO and IDNO networks. Our revised position is that the DNO should be responsible for deciding the solution that is required and paying the costs associated with the solution and its installation. This guidance is intended to provide an indication to affected parties as to our starting position in any dispute between a DNO and IDNO regarding boundary measurement received after 1 April 2010 - notwithstanding the fact that each dispute will be considered on a case by case basis.

3.2. We consider it will be reasonable for DNOs to require IDNOs to provide details of the specification of equipment that they have installed at sites that they have adopted. We consider that this could be done within the bilateral connection agreement but will leave IDNOs and DNOs to agree the precise form through which such information is provided. This would allow the IDNOs to back up the claims they make in their responses that they install the same equipment as DNOs and allow validation of whether standard line loss factors classes apply to IDNO sites. Furthermore, it will allow DNOs to be more confident in metering just a sample of sites and using the data obtained at these sites, for example to estimate the likely losses on non metered sites which use similar equipment i.e. create a series of pseudo line loss factors for IDNO sites.

3.3. While we are concerned that DNOs have implemented the current arrangements in an excessively costly manner, we also recognise that the DNOs were acting within the existing policy. Therefore, we do not consider that it would be appropriate for IDNOs to receive any "compensation" for previous boundary metering charges. Our new policy is forward looking. However, when considering what might be done with existing boundary meters DNO might consider how they might be compatible with an efficient boundary metering strategy.

3.4. We have decided to change Ofgem's policy because we are concerned that the previous policy has led to an excessively costly approach being adopted by IDNOs, and an approach that is discriminatory as compared to the use of metering on the DNO's own parts of its network. Our analysis suggests that the costs of universal Half Hourly boundary metering, as applied by most of the DNOs, is very unlikely to secure benefits, particularly through more accurate measurement of losses, that makes the approach cost effective. Therefore, the main effect of this approach appears to be to disadvantage IDNOs when competing with DNOs to operate network extensions.

3.5. Under the new approach it will be for DNOs to determine whether and how to measure flows at the boundary based on what they consider to be the best value for money approach given their incentives, and particularly the losses incentive. However, it will be for DNOs to decide the arrangements they want to put in place.

3.6. Our consultation document set out a range of potential options including the use of a sample of boundary meters. We consider that DNOs could use a sample to create a series of pseudo line loss factors (or correction factors) that could then be applied to similar IDNO sites which might not be metered. This approach could require IDNOs to readily provide information on the type of equipment installed on their network, or in order that the DNO understands which correction factor should be used on which IDNO sites. We plan to closely monitor the arrangements which emerge following this decision and if using an arrangement such as using a sample of meters can be demonstrated to be the most efficient way to measure flows at the boundary and comply with other obligations such as losses reporting, we would consider funding it as part of DCPR6.

3.7. We note from discussions at the DNO/IDNO billing working group that there is some uncertainty regarding the inclusion of the facility to reconcile to boundary metering in the enduring solution for IDNO billing. This may be an efficient approach. However DNOs (and IDNOs) should consider whether the facility to identify within the billing system electricity flows at individual IDNO sites and reconcile settlement data to boundary metered data would be useful for evidencing an efficient level of boundary metering or developing IDNO specific loss factors for use in the reporting of DNO losses.

3.8. The change in policy for boundary metering will be introduced alongside the introduction of portfolio billing for IDNOs on 1 April 2010. We understand from discussions with Elexon that it is confident that the proposed approach to implementing portfolio billing is compatible with our change in policy, and in particular, can work effectively if DNOs choose to use a sample of boundary meters.

3.9. Most DNOs argued that they should receive funding under their price control for any boundary meters they choose to install. We accept that in principle there may be a minimum level of boundary metering that an efficiently run DNO would need to install. However, given the way DNOs have implemented the existing policy it is not possible to robustly determine what that efficient level might be. Therefore, and without providing any guarantee that revenue would be allowed, DNOs will be able to make the case at DPCR6 for an efficient level of future costs for measuring the flows at the boundary<sup>6</sup>. However, given the developments in smart metering and the potential for wider use of network metering for other network management reasons, it may in practice turn out that any separate consideration of boundary metering for

---

<sup>6</sup> This would include an assessment of where existing meters (which had been leased to IDNOs) were merely redeployed.

IDNOs is overtaken by other considerations that influence the installation of meters at a range of points on the network to secure other benefits.

## Appendices

### Index

Appendix	Name of Appendix	Page Number
1	Costs of boundary metering	19
2	The Authority's Powers and duties	20
3	Glossary	22
4	Feedback questionnaire	25

## Appendix 1 – Costs of boundary metering

Table 1.1 is taken from our October consultation document and looks at the total cost of boundary metering over 40 years and then per site per year.

**Table 1.1 - Boundary metering as percentage of 40 year income**

	50 plot LV site revenue over 40 years	LV boundary metering charges over 40 years excl. housing	Boundary cost as % of revenue
Dom UR			
CN East	£34,674	£0	0%
CN West	£38,062	£0	0%
CE NEDL	£49,944	£16,000	32.04%
CE YEDL	£41,888	£16,000	38.20%
EDF EPN	£23,669	£8,912*	37.65%
EDF LPN	£23,338	£8,912*	38.19%
EDF SPN	£27,057	£8,912*	32.94%
ENW	£44,273	£11,200	25.30%
SPD	£57,815	£17,360	30.03%
SPM	£54,798	£17,360	31.68%
SEPD	£51,407	£29,850	58.07%
SHEDP	£58,950	£29,850	50.64%
WPD West	£54,197	£3,880	7.16%
WPD Wales	£65,390	£3,880	5.93%

*\* Our understanding is that EDF insists that IDNOs procure the meter themselves and Table 1.1 contains the lowest costs over 40 years at which IDNOs have outlined they are able to procure the meter and data retrieval services which comply with EDF's requirements. These are the lowest costs we are aware of that IDNOs in EDF's distribution areas are able to procure the required meters at. Again we assume a ten year meter life and thus that four meters are required over the 40 year period.*

Please note that Table 1.3 makes a couple of assumptions. Firstly it deals with 40 year revenue from 50 plot LV domestic unrestricted sites<sup>7</sup> and secondly it is based on Ofgem's understanding of the charges DNOs (except EDF) levy or still recover for metering.

<sup>7</sup> IDNOs own data demonstrates that 81% of all bidding opportunities which arise are for sites with 50 plots or less.

## Appendix 2 – The Authority’s Powers and Duties

1.1. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority (“the Authority”), the regulator of the gas and electricity industries in Great Britain. This Appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

1.2. The Authority’s powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.<sup>8</sup>

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly<sup>9</sup>.

1.4. The Authority’s principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of existing and future consumers, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas conveyed through pipes, and the generation, transmission, distribution or supply of electricity or the provision or use of electricity interconnectors.

1.5. The Authority must when carrying out those functions have regard to:

- the need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- the need to secure that all reasonable demands for electricity are met;
- the need to secure that licence holders are able to finance the activities which are the subject of obligations on them<sup>10</sup>;
- the need to contribute to the achievement of sustainable development; and
- the interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.<sup>11</sup>

<sup>8</sup> entitled “Gas Supply” and “Electricity Supply” respectively.

<sup>9</sup> However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.

<sup>10</sup> under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.

<sup>11</sup> The Authority may have regard to other descriptions of consumers.

1.6. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

- promote efficiency and economy on the part of those licensed<sup>12</sup> under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity; and
- secure a diverse and viable long-term energy supply.

1.7. In carrying out the functions referred to, the Authority must also have regard, to:

- the effect on the environment of activities connected with the conveyance of gas through pipes or with the generation, transmission, distribution or supply of electricity;
- the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- certain statutory guidance on social and environmental matters issued by the Secretary of State.

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation<sup>13</sup> and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

---

<sup>12</sup> or persons authorised by exemptions to carry on any activity.

<sup>13</sup> Council Regulation (EC) 1/2003



## Appendix 2 - Glossary

### A

#### Authority

The Authority is the governing body for Ofgem, consisting of non-executive and executive members.

### C

#### Common Distribution Charging Methodology (CDCM)

The common methodology for HV/LV charging as developed and submitted by the DNOs on 25 August 2009 for approval by the Authority under standard licence condition 50.

### D

#### Distribution Connection and Use of System Agreement (DCUSA)

The DCUSA is an industry code which governs connection and use of system arrangements between DNOs, suppliers and some generators on the distribution networks.

#### Distributed Generation (DG)

Generation which is connected directly into the local distribution network as opposed to the transmission network, as well as combined heat and power schemes of any scale. The electricity generated by such schemes is typically used in the local system rather than being transmitted for use across Great Britain.

#### Distribution Network Operators (DNOs)

A licensed distributor which operates electricity distribution networks in distribution service areas but can also compete to operate networks anywhere within Great Britain.

#### Distribution Price Control Review 5 (DPCR5)

DNOs operate under a price control regime, which are intended to ensure DNOs can, through efficient operation, earn a fair return after capital and operating costs while limiting costs passed onto customers. Each price control typically lasts five years at a time. The existing price control (DPCR4) will expire 31 March 2010. DPCR5 is planned to commence on 1 April 2010.

#### Distribution Service Area (DSA)

As defined in SLC 1 of the electricity distribution licence.

**E**[Electricity Act 1989](#)

Electricity Act 1989 c.29 as amended. Also referred to as 'The Act'.

**H**[Half hourly \(HH\) metered customers](#)

Customers with a metering system which provides measurements on a Half Hourly basis for settlement purposes.

[HV/LV – High/Low Voltage](#)

Term used to describe the parts of the distribution networks typically at a voltage level of less than 22kV.

**I**[Independent Distribution Network Operators \(IDNOs\)](#)

A licensed distributor which does not have a distribution services area and competes to operate electricity distribution networks anywhere within Great Britain.

**L**[Licensed Distribution Network Operators \(LDNOs\)](#)

A term that captures both IDNOs and DNOs operating networks outside their distribution services areas.

**N**[Non Half Hourly \(NHH\) metered customers](#)

Customer with a metering system that does not provide measurements on a Half Hourly basis but rather total consumption to date at time of reading. Settlement is based on profiling data.

**S**[Standard Licence Condition \(SLC\)](#)

These are conditions that licensees must comply with as part of their licences. SLCs are modified in accordance with Section 11A of the Electricity Act. Failure to comply with SLCs can result in financial penalties and/or enforcement orders to ensure compliance.

**U**

### Use of System (UoS) Charges

Use of System Charges: Charges paid by generators and suppliers for the use of the distribution network.

## Appendix 3 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

1.2. Please send your comments to:

**Andrew MacFaul**  
Consultation Co-ordinator  
Ofgem  
9 Millbank  
London  
SW1P 3GE  
[andrew.macfaul@ofgem.gov.uk](mailto:andrew.macfaul@ofgem.gov.uk)