

DPCR4 Losses Incentive Closeout

Assurance of data submitted by DNOs

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1 Introduction

1.1 Scope

Ofgem has requested ESP Consulting (ESP) to provide a review and assurance of the data submitted by DNOs for use in calculation of the final incentive payments for DNOs under the losses incentive mechanism for DPCR4.

There are in effect two principal components to the works:

- That the data submitted by each DNO is consistent with the DNO's historical reporting methodology; and
- That the data should be consistent with fully reconciled settlements data and any discrepancies in DNO provided data are adequately explained and justified

There are therefore in effect two processes to the close out of the losses incentive:

- Where DNOs have requested a restatement of 2009/10 data, that the data provided reconciles with the audited data provided annually by DNOs over the DPCR4 period. Where there are differences, each difference should represent a valid change in line with the company's reported methodology (provided in response to a data request issued by Ofgem in 2009). In discussions with Ofgem, we have not been asked to check the validity of the annual audited reported data and whether it was provided consistent with the DNO stated methodology
- That the data provided by DNOs for 2009/10 is on a fully reconciled basis in accordance with the DPCR5 Final Proposals and therefore that such data reconciles with settlement data. Where there are differences, we have sought to obtain assurance from the DNO as to the accuracy and validity of the difference in line with their stated methodology and the DPCR5 Final Proposals and agreed back to source records.

This report has been requested by Ofgem for their internal use in order to inform their decision making as to the validity of the approaches taken by DNOs and the data provided by them in closing out the DPCR4 losses incentive.

1.1.1 Restatement of 2009/10 reported data

Where companies have identified abnormalities in their reported losses data over the DPCR4 period, then they can apply for restatement of their 2009/10 data in line with the approaches included in Ofgem's letter to DNOs dated 30th July 2012. With the exception of SSES, SSEH, UKPN SPN and UKPN LPN, all other DNOs have applied for restatement and therefore submitted data for the period April 2005- August 2012 covering each of the settlement runs applicable to the DPCR4 period.

We have been provided with an excel workbook by Ofgem, which compares DNO submitted data with that reported and audited by a third party annually. This has also apparently been confirmed by the checking undertaken by British Gas. We have therefore not sought to check the data contained in the spreadsheet back to annual reports or DNO submitted data and have been instructed that there is no requirement to confirm the validity of the annually reported audited data with DNO's losses methodologies.

The workbook provided identified the following discrepancies between the DNO submitted data for restatement and that reported annually:

	Difference in reported and annual losses (GWh)				
	2005/6	2006/7	2007/8	2008/9	2009/10
ENW	30	106	-47	43	-4
NPgN	0	0	0	1	-1
NPgY	-140	163	0	3	-1
WPD WMID	-165	226	260	-98	105
WPD EMID	-450	133	553	530	567
WPD SWALES	-31	-25	-28	-35	68
WPD SWEST	-22	-18	-18	-91	135
UKPN EPN	0	-7	0	0	0
SPD	2	-2	31	40	262
SPMW	2	1	-83	99	198

1.1.2 Data provided for close out of DPCR4 losses incentive

As per DPCR5 Final Proposals, DNOs are required to close out the DPCR4 losses incentive after *'[subsequent] settlement data associated with DPCR4 has been accounted for and the DPCR4 annual reported losses have been revised accordingly. This includes subsequent corrections to DPCR4 settlement data and the 'closing out' of DPCR4 provision accounts. As we stated, this will ensure that all DNOs receive the losses incentive based on their absolute losses performance over DPCR4 and ultimately, that rewards/penalties under the DPCR4 scheme are not influenced by the different reporting bases that companies used.'* This should therefore be on a 'fully reconciled basis'.

In the workbook provided by Ofgem, the data submitted by DNOs has been compared with HH and NHH data provided by Elexon and by settlement data (D0276 – GSP Group Consumption data) sourced by British Gas and reconciled with that data provided by Elexon to incorporate entry flows. For some companies there were significant differences between the data they had provided and that settlement data. The DNOs were subsequently asked by Ofgem to reconcile the differences but, on the whole, there remain significant unexplained differences. We have not sought to check or recreate the data contained in the workbook provided by Ofgem but have focused on

- Validating with the DNOs the remaining unexplained difference between settlement data and that provided by DNOs, including checking the differences back to source data where possible
- Validating the already identified variances back to source data where possible and reviewing for reasonableness including referencing back to their stated methodologies.

A key risk is that the data is unique to each DNO based upon its reporting method and sourced from its billing systems, hence we can only assess the nature of the reconciling differences identified by each DNO and highlight the scale of any remaining unreconciled difference. We have also compared the nature and scale of the adjustments made by DNOs in order to consider whether their adjustments are both reasonable and complete. In the relevant company section we discuss the nature of the differences, the reconciling items, and the approach we have been able to take to ensure the adjustments are valid. Where, at Ofgem's request, companies initially disclosed an analysis of 'manual' adjustments (e.g. Adjustments for distributed generation (DG) losses outside of Ofgem prescribed tolerances; 'Own consumption electricity'; independent network operator (IDNO) units etc.) outside of their billing systems which explained some of the difference, we have not sought to reproduce that analysis in the company sections unless specific issues have arisen that have necessitated further comment.

2 Discussion by company

The following sub-sections set out the reconciliation of each DNO's 2009/10 submission against an equivalent data provided by Elexon. In each case this shows:

- The key items that each DNO has identified during this process to reconcile the two data sets; and
- Any reconciling items that the DNO had earlier proposed to Ofgem and where ESP wish to highlight an issue with those items.

For each DNO, this is shown as a waterfall chart showing how the reconciling items affect the differences between Settlement and DNO data that were unexplained at the start of this ESP Consulting review. This is shown separately for the difference between units entering and units exiting, with the following conventions:

- Differences between Settlement and DNO data are always shown such that a negative difference implies lower losses reported by the DNO (beneficial to the DNO), and a positive difference implies higher losses reported by the DNO (beneficial to the Consumer).
- Differences in units entering are shown as a waterfall moving from the left of the graph towards the middle. That is:
 - The left-most (blue) bar shows the unexplained difference between Settlement and DNO data for units entering as at the start of this review (Units Entering Opening Delta);
 - Subsequent bars show adjustments that DNOs have identified through this ESP Consulting review;
 - The remaining un-reconciled difference between Settlement and DNO data for unit entering is then shown as a further blue bar, to the right of the bars for all the relevant adjustments (Units Entering Closing Delta).
- Differences in Units Exiting are shown as a waterfall moving from the right of the graph towards the middle. That is:
 - The right-most blue bar shows the unexplained difference between Settlement and DNO data for units exiting as at the start of this review (Units Exiting Opening delta);
 - Subsequent bars to the left show adjustments that DNOs have identified through this ESP Consulting review;
 - The remaining un-reconciled difference between Settlement and DNO data for units exiting is then shown as a further blue bar, to the left of the bars for all the relevant adjustments (Units Exiting Closing Delta).
- The overall un-reconciled difference between DNO and Settlement data is shown as a separate blue bar, being the sum of the un-reconciled differences for units entering and units exiting.
- Where we have an issue with reconciling adjustments that had been submitted to Ofgem before the ESP Consulting review, these adjustments have been shown as separate bars to the right of the Units Exiting.

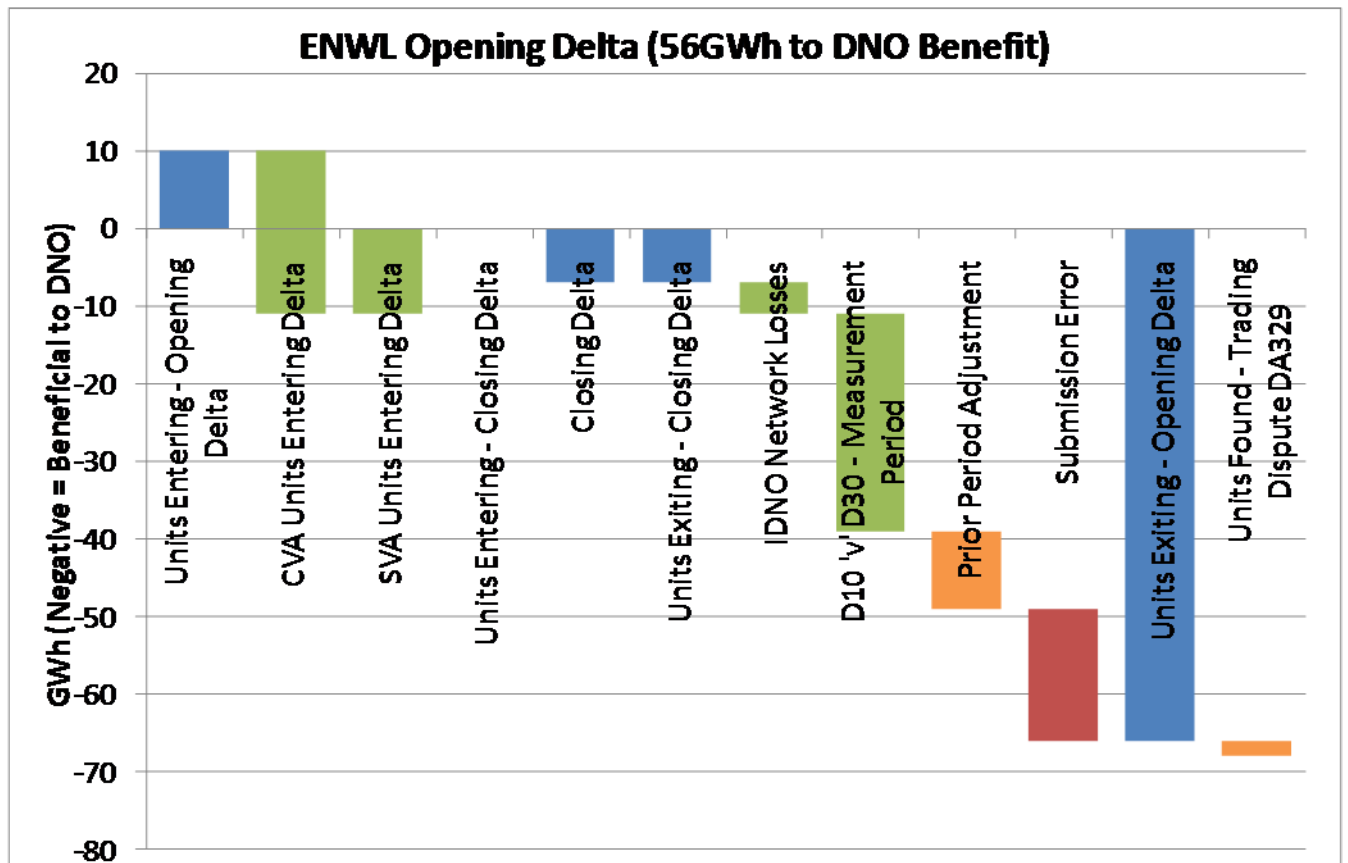
In each case, the waterfall chart is followed by a discussion of the reconciling items and any issues arising.





2.1 Electricity North West Limited (ENWL)

Electricity North West Limited has the Distribution Licence for the legacy “NORWEB” area , covering Manchester and the North West of England. At the start of this process, there was an un-reconciled difference of 56GWh between the losses apparent from 2009/10 data submitted by ENWL and the apparent losses derived from Settlement data, with this difference being made up as follows:

- **Units Entering ENWL’s network:** ENWL data showed 10GWh more energy entering its network than the Settlement data; and
- **Units Exiting ENWL’s network:** ENWL data showed 66GWh more energy exiting its network than the Settlement data.

Further investigation has reduced this un-reconciled difference to 7GWh as illustrated below and discussed in the following paragraphs.



Key			
Absolute Values	Reconciling Items		
	 Policy Issue	 DNO Acknowledged Error	 Other Reconciling Item

2.1.1 Units Entering Reconciling Items

- **Embedded Generation central volume allocation (CVA) Losses (21 GWh):** This covers a difference between the assumed output of CVA metered embedded generation as shown in Elexon data and that used in ENWL's submission. The Elexon CVA data used gives the output of CVA metered embedded generation at GSP, whilst the ENWL data covers the metered embedded generation at "Station Gate". All CVA embedded generation is scaled by a loss factor to get to the equivalent power flow at the grid supply point (GSP), meaning there is a legitimate difference between these two values.

The output from embedded generators can either contribute to, or offset, losses on the relevant DNO's network. Where they offset losses, metered data is scaled up to get to the equivalent value at the GSP – using a Loss Adjustment Factor (LAF) > 1. Conversely, where a generator contributes to losses, their meter data is scaled down to get to the equivalent value at GSP – using a LAF < 1. Where the loss factor is less than 0.997, the DNO is allowed to exclude those losses from this incentive.

ENWL embedded generators with a LAF of < 0.997, would have led to an adjustment of 25GWh which makes the 21GWh reconciling item seem reasonable.

- **Supplier volume allocation (SVA) Units Entering Delta (11GWh):** The ENWL analysis shows a closing delta of 11GWh, where their record of the output from SVA registered embedded generation is 11GWh lower than that showing in Settlement. The most likely explanation for this difference is that Settlement is showing output on some SVA meters within the ENWL network; however, these meters have not been included in ENWL's assessment of export, for example, because ENWL's list of SVA export meters for 2019/10 is incomplete. ENWL have taken various steps to verify their data for Half-Hourly (HH) metered, SVA registered, embedded generators with a focus on the likely cause of errors. This includes:
 - Verifying the relevant set of SVA export MPANs against the set used in their billing system from 2010/11¹;
 - Verifying that meter values for new generators, and generators with increased capacity, have been included;
 - Verifying that meter values exist for any generators that may have been decommissioned before the start of 2010/11, and so not included in that billing system;
 - Looking at the changes in the time series of meter values for the relevant generators, and verifying this is consistent with known changes in the generator capacity.

ESP Consulting believes ENWL have taken reasonable steps to investigate this data discrepancy given the data they have. We believe it is most likely that this 11GWh is explained by export showing up on SVA meters within the ENWL network that are not considered as export meters by the ENWL systems; however, we accept ENWL's argument that verification of this would be time consuming, costly, and need MPAN by MPAN SVA data from Elexon.

2.1.2 Units Exiting Reconciling Items

- **IDNO Network Losses (4GWh):** This reconciliation process is based on comparing an estimate of losses from "pure" settlement data with the statements of each DNO. The "pure" settlement data covers the full losses in delivering electricity to customers within the relevant DNO's "GSP Group". Some of these customers are connected to independent networks (IDNOs) embedded within the relevant DNO's network. In this case, some of the losses in delivering to those customers occur on the relevant IDNO's network.

¹ Note: During DPCR4, embedded generators did not receive a distribution use of system (DUoS) bill, meaning there was little incentive on the DNO or Generator to get this data right; however, since 2010/11 they are billed – or receive a credit – for DUoS, meaning there are incentives on both parties to ensure the billing data is complete and accurate.

ENWL know what went into those IDNOs within its networks from boundary metering (53GWh). They have assumed a 7% "IDNO" loss factor to estimate that 4GWh of the losses estimated from Settlement data actually occurred on the relevant DNO networks. This 7% factor is consistent with that applied by other DNOs.

- **D10 'v' D30 Measurement Period (28GWh):** ENWL's submission for 2009/10 is based on their billing data. Its billing in respect of Profile Classes 5 to 8 is based on monthly meter reads for the relevant customers. This comes through on the D10 data flow, in essence giving the number of MWh that have flowed through each relevant meter since it was last read (the meter advance). The profiling algorithms within the Settlement System allocate this advance to specific half hours within the relevant period, with these half hour values forming the basis of Settlement data against which ENWL's data is being compared.

It is credible to believe that the 28GWh difference is explained by the D10 meter readings that occurred during 2009/10 covered a period of more than a year. ENWL requires that the relevant meters are read once a month, but the data collector is allowed a window of 10 days to make that reading. For a 31 day month, this means that each D10 reading covers 31±10 days. 28GWh is equivalent to around 7 day's consumption for the relevant consumers.

- **Prior Period Adjustment (10GWh):** ENWL's billing systems carry out a number of verification checks on the meter data received by Settlement. Where Half Hourly metered consumption is substantially lower than expected, the billing systems automatically estimate the shortfall for reporting in management accounts. This estimate is then revised over time (e.g. as Settlement disputes lead to correction of the data); however this revision is only carried out to the end of the financial year following the year for which the anomalous data was detected. At this point, the remaining estimate is quantified as a Prior Period Adjustment (PPA), with this prior period adjustment included in ENWL's reporting of losses.

The inclusion of the PPA is long standing and established part of ENWL's methodology for the reporting of losses. ESP Consulting have had sight of an external audit statement verifying that this use of PPA had been part of ENWL's reporting methodology back to 2002/3.

- **Submission Error (17GWh):** ENWL have identified an error where they double counted unmetered PC1 data in their close-out submission for 2009/10. This error arose from a change to their billing system from April 2010.
- **Trading Dispute DA329 (2GWh):** A Settlement Dispute after the end of the DPCR4 period addressed a number of consumption meters that were erroneously being ignored by Settlement. ENWL have included the historical effect of this dispute as a manual adjustment to their data (albeit based on Settlement data)

2.1.3 Outstanding Delta and IDNO Metering Estimate

ENWL have investigated the metering of the customers of IDNOs embedded within its network compared to the boundary metering it used to bill IDNOs during DPCR4. These investigations suggest that the Settlement metering of IDNO customers was consistent with that implied by boundary meters – meaning this is not likely to account for differences between the two areas of data.

As with other DNOs, ENWL do not have both boundary metering and aggregate IDNO customer metering covering the same time period. The latter is only available (as Settlement Portfolio Billing) from the start of DPCR5, with the former discontinuing with the introduction of portfolio metering. ENWL have looked at the growth in IDNO demand based on the number of MPANs registered, and used this to extrapolate the observed portfolio metering for 2010/11 and provide an estimate of its equivalent in 2009/10. The difference between the "estimated" portfolio metering for 2009/10 and the equivalent boundary meters is small and consistent with ENWL's assumption for losses on the IDNO networks.

2.1.4 Data Provided Under Approach C for restatement

In providing data for approach C, ENWL have not been able break down the NHH reported data into calendar months, revenue having been calculated based upon accounting weeks and not calendar days. ENWL do however have record of the daily NHH data by settlement day and by reconciliation run. ENWL have therefore taken the following approach in providing data for restatement:

- **HH Data:** This data is available on a monthly basis and has been corrected for prior period adjustments and other identified adjustments (eg the Extra Settlement Determination) in order to allocate the data to correct months as far as possible.
- **NHH Data:** ENWL have provided monthly NHH data on the basis of flows received through their billing systems, extracted on a settlement month basis, and month-shifted using an approximate settlement calendar in order to reflect the months in which each reconciliation run would have been billed.

On the understanding that no changes have been made to their methodology, the data reported under approach C should reflect annual data with the exception of the provision accounting that occurred in the annual reports at the end of each calendar year and the time shifting of subsequent reconciliations that would have been applied to the relevant accounting period which didn't accurately correspond to the calendar year. Having reviewed ENWL reconciliation, over the 5 year period, month-end timeshifting of data as a result of a 4-4-5 accounting period netted off to just 14GWh which appears reasonable.

2.1.5 ENWL – Policy Issues

There are two policy issues in the reconciling items provided by ENWL.

- Treatment of the Prior Period Adjustment; and
- Treatment on Dispute DA329

The first issue relates to whether the "Prior Period Adjustment" should be included within their submission. ESP Consulting are satisfied that:

- The inclusion of the Prior Period Adjustment is part of the losses reporting methodology of ENWL.
- That the Prior Period Adjustment was part of its losses reporting methodology back to 2002/3 – and so is incorporated in the setting of targets for the DPCR4 losses incentive

Both the above points are confirmed in an extract from an audit report that has been shared with ESP Consulting. This was an external audit of its Revenue Reporting Model by Deloitte and Touch LLP. Notwithstanding this, ESP Consulting note that the:

- The use of "Fully Reconciled Data" for the DPCR4 close out means that the units showing in the Prior Period Adjustment had not showin in Settlement for that period;
- The intent of the DPCR4 closeout was for DNOs to report data that had shown in Settlement, rather than estimates of what might appear later in Settlement.

The second issue relates to whether ENW should have adjusted for a dispute (DA329) where a number of meters have been missed from Settlement. The adjustment is a manual one, albeit derived from settlement data. In addition, this is not an adjustment explicitly allowed for in their methodology..

2.1.6 ENWL – Errors

In reconciling their data, ENWL have found one error in the data they submitted. This relates to RF (Final Run) data for un-metered, profile class 1, customers which relates to energy consumed during 2009 but was received after the end of 2009/10. This was a double counting that occurred because close out required ENWL to consider data received after the end of DPCR4. This should not be included in their numbers for 2009/10, but was let through as a result of a change in billing system from the start of April 2011.

Given the timescale for RF runs, those that occurred after the end of March 2010 would have also covered February and March of 2009; hence this error would have also affected ENWL close-out data for 2008/09.

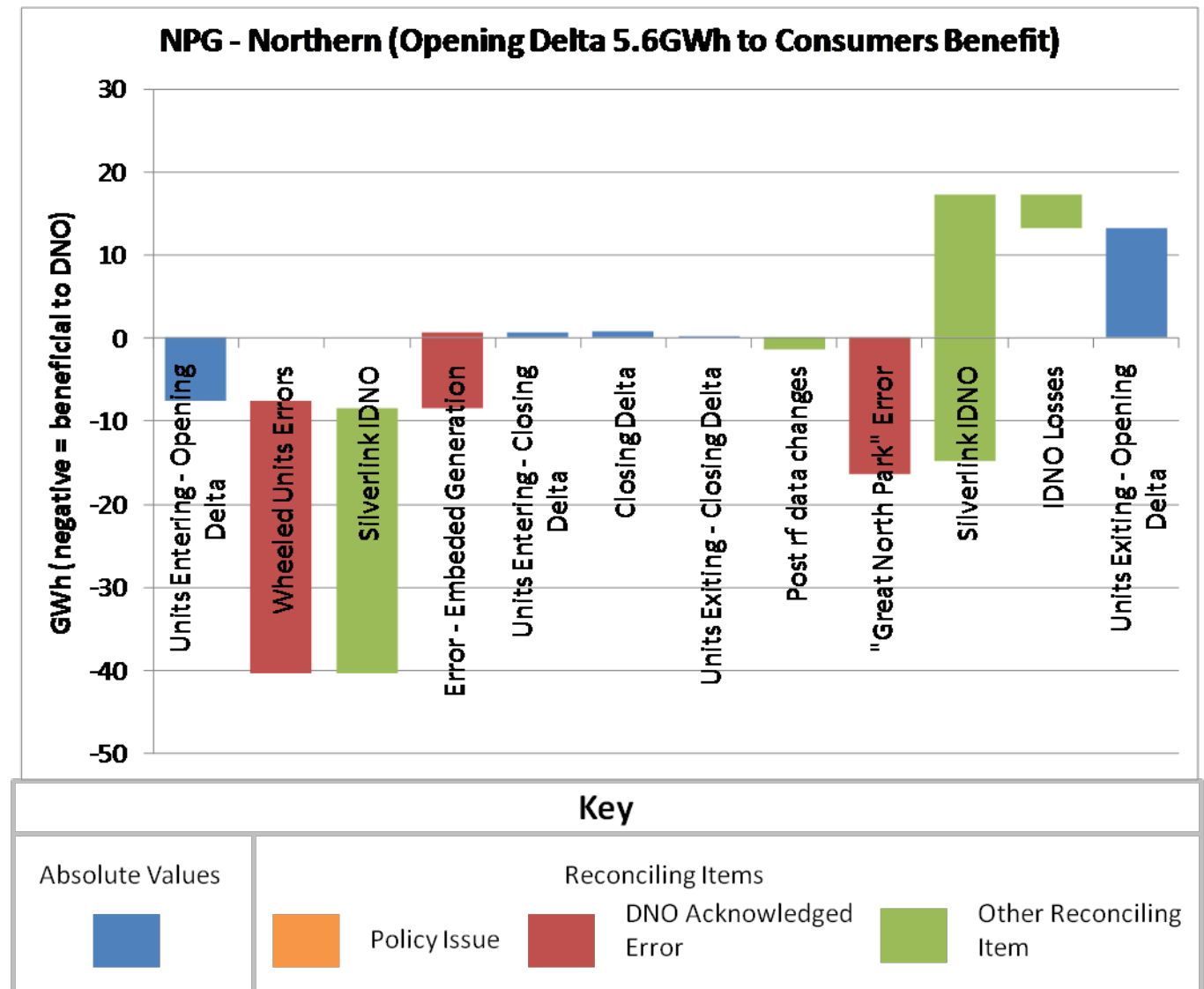
2.2 Northern Powergrid - Northern

Northern Power Grid (NPG) operates two distribution licenses covering the North East of England. These cover the licensed areas that were operated by Northern Electric and Yorkshire Electric when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy Northern Electric network.

At the start of this process, there was an un-reconciled difference of 5.6GWh between the losses apparent from 2009/10 data submitted by NPG and the apparent losses derived from Settlement data, with this difference being made up as follows:

- **Units Entering NPG’s Northern network:** NPG data showed 7.6GWh less energy entering its Northern network than the Settlement data; and
- **Units Exiting NPG’s Northern network:** NPG data showed 13.2GWh less energy exiting its network than the Settlement data.

Further investigation has reduced this un-reconciled difference to 0.76GWh to the benefit of the Consumer as illustrated below and discussed in the following paragraphs.



2.2.1 Units Entering Reconciling Items

- **Wheeled Units Errors (33 GWh):** NPg's Northern networks wheels energy for delivery to customers in its own Yorkshire network and in ENWL's network. In each case, the flow into the adjacent network is metered, with the relevant meter being registered as a Distribution System Connection Point (DSCP) for SVA settlement. This means that the Settlement GSP group data adjusts the actual metered flows "as if" the relevant energy had flowed directly into the relevant network. That is:
 - For SVA Settlement, the flow at the relevant DSCP is added to the flows into the receiving GSP group (its GSP Group Take), and taken off the units entering the Northern network.

From 2003, NPg Northern's losses reporting has erroneously adjusted units entering for wheeled units. They have been increasing units entering to account for the wheeled units, but did not make an equivalent adjustment to units exiting. This has the effect of increasing the apparent losses as reported by NPg Northern.

We have been assured that this error was introduced after the targets were set for the DPCR4 losses incentive. During the DPCR3 period, NPg's losses reporting for the Northern network included and itemised several adjustments – including one for wheeled units. NPG believe that these were removed for the setting of the DPCR4 targets.

- **Silverlink IDNO (32GWh):** The Silverlink IDNO is supplied directly from one of the GSPs within the Northeast GSP Group area; but is otherwise independent and electrically remote of that network. Settlement "Supplier Volume Allocation" treats the Silverlink IDNO as part of the NPG Northern GSP Group – meaning that adjustments are needed to remove the power flows across the Silverlink network to correctly state the NPG Northern numbers. The 32GWh reconciling item is derived from meter data for units entering that IDNO.
- **Error – Embedded Generation (9GWh):** NPG have checked the scripts they used to extract the data reported to Ofgem and found an error. This error led to them excluding all data for a distributed generation MPAN that had been disconnected during the relevant year – even if it had generated for part of that year.

2.2.2 Units Exiting Reconciling Items

- **Post RF Data Changes (1.4GWh):** NPg's close out statements are based on DF data. In reconciling its submission with the comparable Settlement data NPg have considered the changes between RF and DF runs apparent in their billing data and that apparent in Settlement data, highlighting a 1.4GWh error. There are a number of reasons that could account for this, including the £5 de minimus billing limit applied by NPg (as the actual adjustments between DF and RF can be small in magnitude)
- **"Great North Park" Error (16.5GWh):** NPg have discovered an error in the data being provided to them for the boundary metering for the Great North Park IDNO. This error leads them to include the metered reactive power flows at that point as active power. During this review of losses data, NPg have investigated this error with their metering agent – seeking to test the actual power factor at the site to estimate how its historic meter data should be split between active and reactive power. This investigation is now complete, and has led to a significant increase in the estimate of this error.
- **Silverlink IDNO (32GWh):** The Silverlink IDNO is supplied directly from one of the GSPs within the Northeast GSP Group area; but is otherwise independent of that network. Settlement SVA treats the Silverlink IDNO as part of the NPg Northern GSP Group – meaning that adjustments are needed to remove

the power flows across the Silverlink network to correctly state the NPg Northern numbers. The 32GWh reconciling item is derived from meter data for units entering that IDNO.

- **IDNO Losses (4GWh):** Of the 29GWh that flowed into the Silverlink IDNO, only ~26.1GWh would show up on the meters of Silverlink customers, with ~2.9 GWh being lost on the Silverlink network. NPG have estimated the losses on the Silverlink network at 10% of the units at the GSP; this assumption seems reasonable given loss factors observed for other electricity distribution networks. A similar assumption for the Great North Park network accounts for the balance of the 4GWh.

2.2.3 NPg Northern – Outstanding Balancing Items

Northern Power Grid have further investigated the potential causes of this 5.6GWh un-reconciled difference, with the following points of note from their investigation:

- There is no CVA metered embedded generation within the Northern network, so CVA generation losses are not part of the explanation;
- NPg do have a de minimis billing limit – such that they do not raise bills if the value is less than £5. As its loss reporting is based off billing data, this would also account for some of the difference.
- NPg have investigated Settlement data for 2011/12 and found 7GW of import showing on export meters. There could have been similar errors during 2009/10.

2.2.4 Data Provided Under Approach C for restatement

There were only small rounding differences between the data provided for restatement and that provided and audited annually under SLC47. NPgN has therefore submitted data in accordance with Approach C

2.2.5 NPg Northern – Policy Issues

There are no policy issues arising from the reconciliation of NPG Northern data

2.2.6 NPg Northern – Errors

NPG have discovered two errors in the process of carrying out this reconciliation:

- An error in the extraction of metered generation for embedded generators;
- An error with the boundary metering at Great North Park; and
- An error in respect of adjustments made relating to the wheeling of energy between distribution networks.

At first sight, it looks as if all these errors would also affect the NPg Northern submissions for previous years.

2.3 Northern Powergrid - Yorkshire

Northern Powergrid operate two distribution licenses covering the North East of England. These cover the licensed areas that were operated by Northern Electric and Yorkshire Electric when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy Yorkshire Electric network.

At the start of this process, there was an un-reconciled difference of 2.1GWh between the losses apparent from 2009/10 data submitted by NPg and the apparent losses derived from Settlement data. Given the small size of this reconciling item, it was felt that no further reconciliation was required. This view was supported by the industry representatives including the representative of British Gas at an industry workshop to discuss the reconciliation of DNO losses submissions with Settlement data.

Northern Powergrid have further investigated the potential causes of this 2.1GWh un-reconciled difference, with the following points of note from its investigation:

- 0.5 GWh could be accounted for as losses between the IDNO boundary meters and its customers
- CVA losses on Brigg power station will account for some of the difference; however:
 - The Brigg loss factor is close to unity – so the effect will be small
 - NPg have not as yet been able to source data for the Brigg metering to determine an accurate estimate of this factor
- NPg do have a de minimis billing limit – such that they do not raise bills if the value is less than £5. As their losses reporting is based off billing data, this would also account for some of the difference.
- NPg have investigated Settlement data for 2011/12 and found 3GW of import showing on export meters. There could have been similar errors during 2009/10.

2.3.1 Data Provided Under Approach C for restatement

The difference between NPg Yorkshire's SLC47 annual data and reported data for the purposes of restatement was identified to a billing issue in Yorkshire from when they were acquired and adopted Northeast's systems. The error was initially corrected via ad hoc invoices but the occurrence of DF data flows caused the historical restatement of data covering the period of the error. NPg therefore asked for DF to be stopped until the issue could be resolved. The adjustment therefore relates to the units in subsequent DF runs that were billed in 2006/7 from when Yorkshire was properly included in the disputes process.

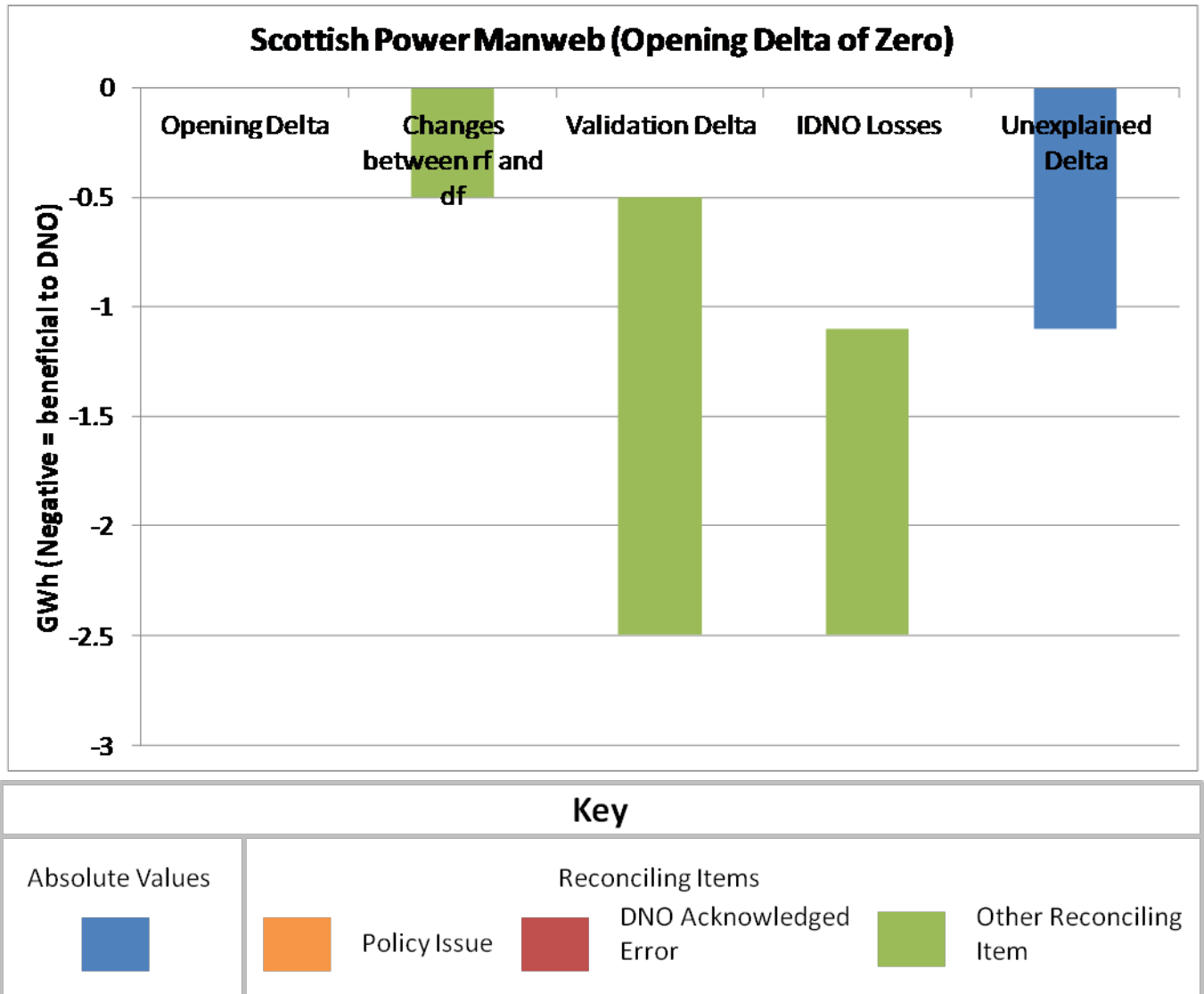
NPg have subsequently reproduced the data for restatement on the basis of when it should have been billed initially but this was not amended retrospectively in any SLC47 return. NPg said this treatment was consistent with the purpose of the restatement exercise, i.e to establish normal and abnormal periods so that an adjustment could be made to 2009/10 data that would best reflect the data that would have been received had suppliers not changed their behaviour. The data provided historically under SLC47 was therefore based upon when it was actually billed whereas the data provided for restatement attempts to replicate when it should have been billed had the billing issue not occurred in order to observe an accurate level of annual losses historically.

This losses data therefore differs from that reported historically but since it doesn't go back prior to 2004/5 it will have no impact on losses targets. NPg have provided us with a monthly reconciliation of the correction. The residual differences are small and can be attributed to rounding of the historical revenue returns on a monthly basis.

2.4 Scottish Power – Manweb

Scottish Power operate two distribution licenses covering the South of Scotland as well as Merseyside and North Wales. These cover the licensed areas that were operated by Scottish Power and MANWEB when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy MANWEB network.

At the start of this process, the losses apparent from Scottish Power’s submitted data for the MANWEB area completely reconciled with those derived directly from settlement data. Scottish Power have subsequently investigated their submissions, and validated the data against that in settlement. This reconciliation is shown below, and leads to an un-reconciled difference of 1.1GWh in favour of Scottish Power.



- Changes between RF and DF (0.5GWh):** : For the Manweb GSP group, changes to Half Hourly data (as reported through the D36 data) are not incorporated in the SVA process beyond the RF run. This means that DNOs receive and process revisions to historical HH meter data, but these changes will not show in the settlement totals for the GSP Group (e.g. from the D276 flow). For Manweb this leads to a net difference of 0.5GWh between the Settlement data as used for reconciliation and that they used for billing. This net difference was in the DNO’s favour (e.g. reductions to half-hourly metered export from embedded generators, or increases in half-hourly metered consumption).

- **Validation delta (2GWh):** Scottish Power validates settlement meter data against Market Domain Data (MDD) to identify and reject spurious meter values (e.g. export showing on an import register). In applying these rules, they have identified a net difference of 2GWh between their billed and the Settlement data used for reconciliation. This net difference is in the DNOs favour (i.e. in the main, it rejects export meter values – that would have increased the apparent flow of energy into its network)
- **IDNO Losses (1.4GWh):** The losses that are apparent from Settlement data cover all electrical flows between the injection of energy into the network (at a Grid Supply Point, or by an Embedded Generator) and its withdrawal at end customer sites. Some of these flows occur over networks that are operated by independent parties (IDNOs), so it is necessary to net these flows out of the Settlement data for a correct reconciliation. In its submission, Scottish Power netted out 19GWh for the flow into IDNOs embedded within the Manweb network; however, as Settlement data is based on meters at customer sites, a further adjustment is needed to reflect losses on the IDNO network (i.e. between the boundary meter and the sites). Scottish Power has estimated at 1.4GWh based on a loss factor of 7%. This is consistent with the loss factors and approach used by other DNOs.

2.4.1 Data Provided Under Approach C for restatement

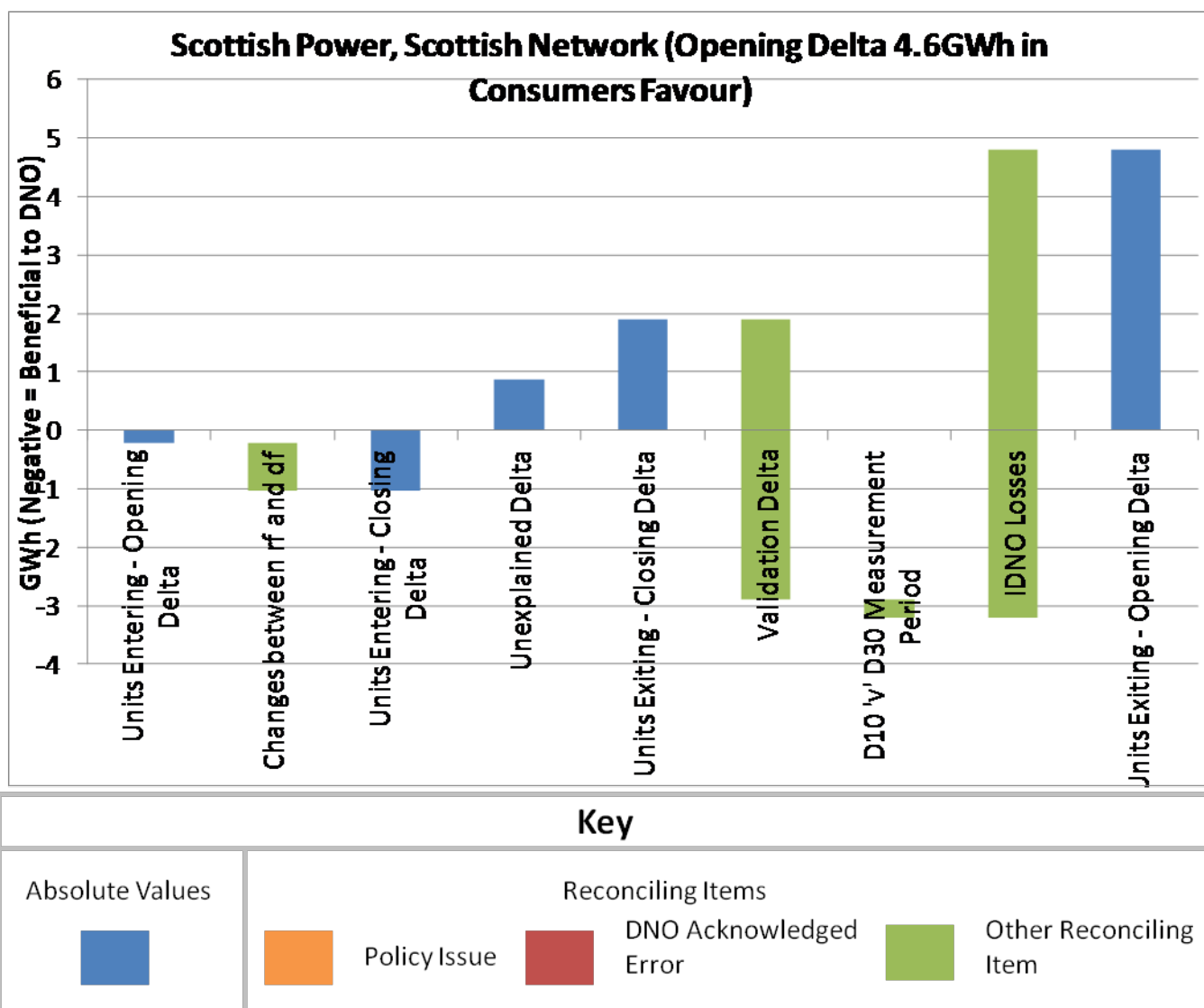
SP's method of fully reconciled data in their losses calculation is implied within their methodology. Their methodology makes an estimate of unbilled units which is then corrected via restatement of prior years as existed in 2005/6 and 2006/7 returns. Had revenue returns continued post DPCR4, these units would have been restated in 2007/8, 2008/9 and 2009/10 returns made in subsequent years which would have had a knock on effect to the growth driver in DPCR4.

Such reconciliation differences and provisions have been audited as part of the year end financial audits with the exception of 12GWh in respect of Manweb that will fall as part of 2012/13 revenues.

2.5 Scottish Power – Southern Scotland

Scottish Power operates two distribution licenses covering the South of Scotland as well as Merseyside and North Wales. These cover the licensed areas that were operated by Scottish Power and MANWEB when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy Scottish Power network.

At the start of this process, the losses apparent from Scottish Power’s submitted data for the Southern Scotland area completely reconciled with those derived directly from settlement data. Scottish Power have subsequently investigated their submissions, and validated the data against that in settlement. This reconciliation is shown below, and leads to an un-reconciled difference of 0.8 GWh in favour of the consumer.



2.5.1 Units Entering Reconciling Items

- Changes between RF and DF (0.8GWh):** For the Southern Scotland GSP group, changes to Half Hourly data (as reported through the D36 data) are not incorporated in the SVA process beyond the RF run. This means that DNOs receive and process revisions to historical HH meter data, but these changes will not show in the settlement totals for the GSP Group (e.g. from the D276 flow). For Southern Scotland this leads to a net difference of 0.8GWh between the Settlement data as used for reconciliation and that they used for billing.

This net difference was in the DNO's favour (e.g. reductions to half-hourly metered export from embedded generators, or increases in half-hourly metered consumption).

2.5.2 Units Exiting Reconciling Items

- **IDNO Losses (8GWh):** The losses that are apparent from Settlement data cover all electrical flows between the injection of energy into the network (at a Grid Supply Point, or by an Embedded Generator) and its withdrawal at end customer sites. Some of these flows occur over networks that are operated by independent parties (IDNOs), so it is necessary to net these flows out of the Settlement data for a correct reconciliation. In its submission, Scottish Power netted out 115GWh for the flow into IDNOs embedded within the Southern Scotland network; however, as Settlement data is based on meters at customer sites, a further adjustment is needed to reflect losses on the IDNO network (i.e. between the boundary meter and the sites). Scottish Power has estimated at 1.4GWh based on a loss factor of 7%. This is consistent with the loss factors and approach used by other DNOs
- **D10 'v' D30 Measurement Period (0.3GWh):** Scottish Power's submission for 2009/10 is based on their billing data. Its billing in respect of a number of profile classes is based on periodic meter reads for the relevant customers. This comes through on the D10 data flow, in essence giving the number of MWh that have flowed through each relevant meter since it was last read (the meter advance). The profiling algorithms within the Settlement System allocate this advance to specific half hours within the relevant period, with these half hour values forming the basis of Settlement data against which SP's data is being compared.

It is credible to believe that the 0.3GWh difference is explained by the D10 meter readings that occurred during 2009/10 covered a period of more than a year.

- **Validation delta (4.8GWh):** Scottish Power validates settlement meter data against Market Domain Data (MDD) to identify and reject spurious meter values (e.g. export showing on an import register). In applying these rules, they have identified a net difference of 4.8GWh between their billed and the Settlement data used for reconciliation. This net difference is in the Consumer's favour (i.e. in the main, it rejects import meter values – that would have increased the apparent flow of energy out of its network)

2.5.3 Data Provided Under Approach C for restatement

SP's method of fully reconciled data in their losses calculation is implied within their methodology. Their methodology makes an estimate of unbilled units which is then corrected via restatement of prior years as existed in 2005/6 and 2006/7 returns. Had revenue returns continued post DPCR4, these units would have been restated in 2007/8, 2008/9 and 2009/10 returns made in subsequent years which would have had a knock on effect to the growth driver in DPCR4.

2.6 Scottish and Southern Energy - Hydro

Scottish and Southern Energy operate two distribution licenses covering the North of Scotland and the South of England. These cover the licensed areas that were operated by Hydro Electric and Southern Electric when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy Hydro Electric network.

At the start of this process, there was an un-reconciled difference of 0.9GWh between the losses apparent from 2009/10 data submitted by SSE for the Hydro Electric network (SSEH) and the apparent losses derived from Settlement data. Given the small size of this reconciling item, it was felt that no further reconciliation was required. This view was supported by industry representatives and the representative of BG at an industry workshop to discuss the reconciliation of DNO losses submissions with Settlement data.

2.6.1 Data Provided Under Approach C for restatement

SSEH has not applied for restatement and has not therefore submitted data under approach C.

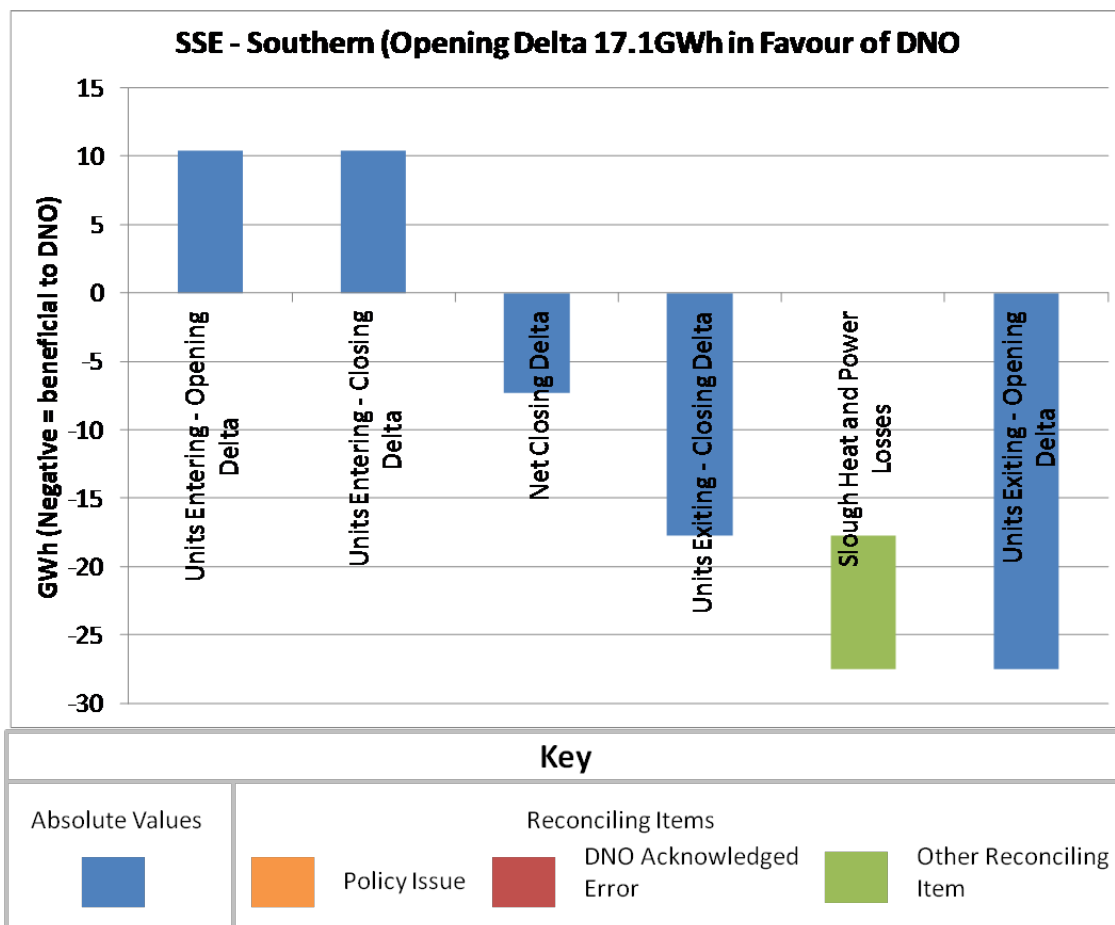
2.7 Scottish and Southern Energy – Southern

Scottish and Southern Energy operate two distribution licenses covering the North of Scotland and the South of England. These cover the licensed areas that were operated by Hydro Electric and Southern Electric when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy Hydro Electric network.

At the start of this process, there was an un-reconciled difference of 17.1 GWh between the losses apparent from 2009/10 data submitted by SSE for the Southern network and the apparent losses derived from Settlement data, with this difference being made up as follows:

- **Units Entering SSE’s Southern network:** SSE data showed 10.5GWh more energy entering its Southern network than the Settlement data; and
- **Units Exiting SSE’s Southern network:** SSE data showed 27GWh more energy exiting its Southern network than the Settlement data.

Further investigation has reduced this un-reconciled difference to 5.6GWh as illustrated below and discussed in the following paragraphs.



2.7.1 Units Entering Reconciling Items

SSE have not been able to explain the difference between the data they submitted and that derived from the Settlements D275 dataflow. SSE’s data is taken directly from another Settlement dataflow – D276.

We note that similar differences have been observed between the D275 data and data used by other DNOs (also derived from D276) – notably by ENWL and by UKPN. In each case these are similar in magnitude to that observed here.

Whilst SSE have not claimed this as a reconciling item, were it included as such, the closing delta would change to 27GWh in favour of the DNO.

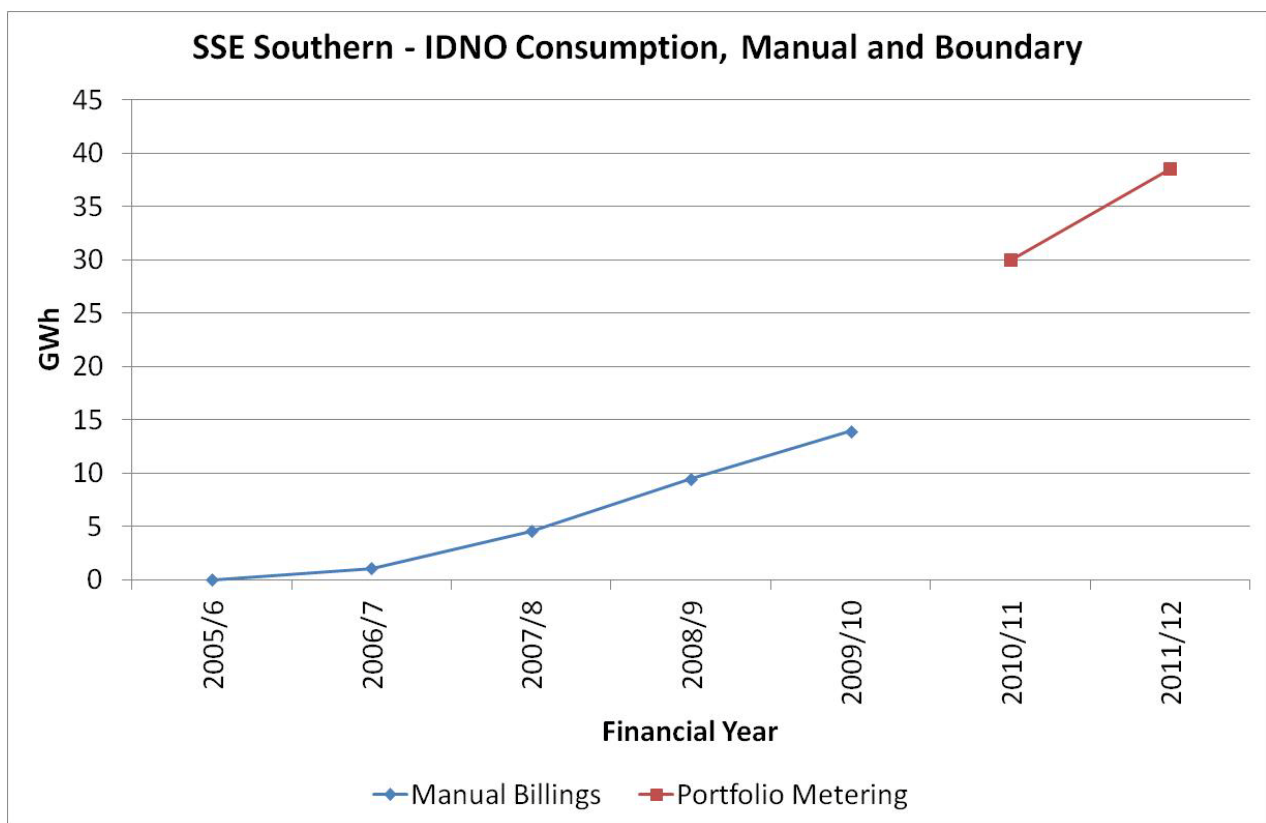
2.7.2 Units Exiting Reconciling Items

- Slough Heat and Power Losses (9.8GWh):** The Southern Network includes an IDNO known as Slough Heat and Power (SHP). All sites on the SHP network are metered within Settlement, with those meter values available to SSE. In SSE’s previous submission to Ofgem, they had netted out this consumption based on those meter values, but did not correct for losses. This correction recognises that error.

2.7.3 Outstanding Delta and IDNO Metering Estimates

For the SSE Southern Network, there remains an un-reconciled difference of 5.6 GWh between the data submitted by SSE, and that apparent directly from Settlement data. One possible explanation for this relates to errors in the metering of customers connected to the IDNO networks within the SSE Southern network.

SSE have “removed” the flows into non-SHP IDNOs based on manual billing details, and have subsequently checked this data against portfolio metering data for the relevant IDNOs – where that data only became available post March 2010. The graph below shows the relevant metered values as a time series, with a change from the introduction of portfolio metering. This suggests the IDNO flows that SSE assumed for its submissions were too low – which would make the unexplained delta greater than that shown; however, this step could equally be explained by a change in growth of demand on the relevant IDNO network.



2.7.4 Data Provided Under Approach C for restatement

SSES has not applied for restatement and has not therefore submitted data under approach C.

2.8 UK Power Networks – Eastern (UKPN - EPN)

UK Power Networks operate three distribution licenses covering the South East of England. These cover the licensed areas that were operated by Eastern Electricity, London Electricity and SEEBOARD when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy Eastern Electricity network.

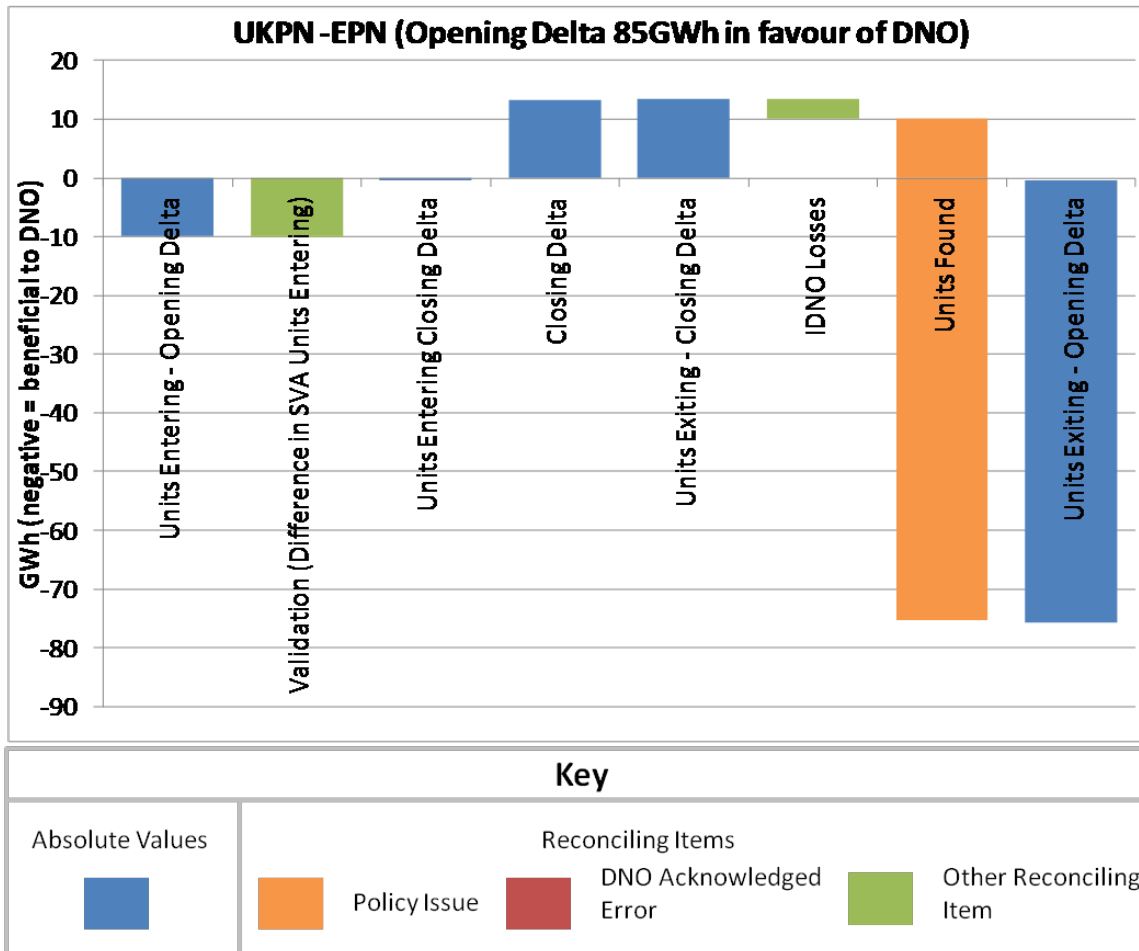
At the start of this process, there was an un-reconciled difference of 85GWh between the losses apparent from 2009/10 data submitted by UKPN EPN and the apparent losses derived from Settlement data, with this difference being made up as follows:

- **Units Entering UK Power Networks Eastern Network:** UK Power Networks data showed 9.8 GWh less energy entering its Eastern network than the Settlement data; and
- **Units Exiting UK Power Networks Eastern Network:** UK Power Networks data showed 75.3GWh more energy exiting its network than the Settlement data.

Further investigation has reduced this un-reconciled difference to 13.21GWh in favour of consumers; however:

- This remaining difference can largely be explained by errors in the Settlement metering of consumption within IDNO networks; and
- It should be noted that the opening delta already incorporated an adjustment for 85 GWh, where some have questioned whether this adjustment should be allowed. This adjustment is in respect of energy where UK Power Networks found that meters had been recording inaccurately into Settlement, and had then estimated the historic effect of these metering errors.

The reconciling items are illustrated below, and discussed further in the following paragraphs.



2.8.1 Units Entering Reconciling Items

- Validation (9.5GWh):** UK Power Networks have identified a 9.5GWh difference between the units entering for half hourly metered sites between the data in their billing system and the data apparent from Settlement data. The most likely explanation of this difference is that Settlement is showing output on some SVA meters within the EPN network; however, these are not recognised as export meters by UK Power Networks. Similar errors have been observed by other DNOs, with ENWL having done the most to verify its own data (and still showing a reconciling item).

2.8.2 Units Exiting Reconciling Items

- IDNO Losses (3.4GWh):** The losses that are apparent from Settlement data cover all electrical flows between the injection of energy into the network (at a Grid Supply Point, or by an Embedded Generator) and its withdrawal at end customer sites. Some of these flows occur over networks that are operated by independent parties (IDNOs), so it is necessary to net these flows out of the Settlement data for a correct reconciliation. In its submission, UK Power Networks netted out 70.9GWh for the flow into IDNOs embedded within the EPN network; however, as Settlement data is based on meters at customer sites, a further adjustment is needed to reflect losses on the IDNO network (i.e. between the boundary meter and the sites). UK Power Networks has estimated at 3.5 GWh based on a loss factor of 5%. This is consistent with the loss factors and approach used by other DNOs.
- Units Found (85GWh):** Under the UK Power Networks Reporting Methodology, it has actively sought MPANs within their networks that seem to be being metered in error (e.g. through applying the wrong scaling factor) and sought to have these corrected through the disputes with the relevant Supplier or Data

Collector. These have most often been resolved through bilateral disputes, without the need for recourse to a full dispute under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. UKPN have then estimated the corrections needed to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction. ESP Consulting has had sight of the workings for a number of these adjustments, and in each case they seem reasonable (see Appendix A).

2.8.3 Outstanding Delta and IDNO Metering Estimate

The reconciliation thus far for the UK Power Networks London network has an un-reconciled difference of 13.2 GWh in favour of the Consumer. The following discussion considers the extent to which this difference is explained by errors in the Settlement metering of IDNO customers. To fully investigate this, we first have to add back in the 3.4GWh IDNO loss item² – to give an un-reconciled difference of 9.8 GWh in favour of the consumer.

There are legitimate differences between the losses apparent from Settlement Data and that reported by the DNO based on what each assumes about the flow of energy into IDNO networks:

- During DPCR4, UK Power Networks measures the flows into each IDNO based on metered flows at the boundary between the relevant UK Power Networks and IDNO networks.
- Settlement data measures the amount of energy consumed by customers on the IDNO network, and makes no adjustment for the losses between the boundary meters and those customers.

An error in the “apparent” losses from pure Settlement data can then occur because either:

- Some of the Settlement losses apparent for the relevant DNO actually occurred on an IDNO’s network; and
- There may be errors in recording or estimating the demand of customers on the IDNO’s network.

Unfortunately, we are not able to compare the boundary meters with the total assumed consumption of IDNO connected customers on an entirely consistent basis, as the data for both is not readily accessible for the same time period:

- During DPCR4 UK Power Networks (as with most other DNOs) billed IDNOs for DUoS based on boundary meters. The IDNO customers were metered and handled through the relevant (SVA or CVA) settlement process; however, the total consumption of each IDNO’s customers was never determined as a separate total.
- From the start of DPCR5, IDNOs have been billed for DUoS based on portfolio metering – which is a summation of the Settlement metered values for IDNO connected customers.

Boundary metering was introduced in response to an Ofgem view that it was discriminatory for DNOs to impose the costs of Boundary meters on IDNOs; consistent with this direction, DNOs and IDNOs generally stopped paying for data to be collected from existing boundary meters from the start of DPCR5.

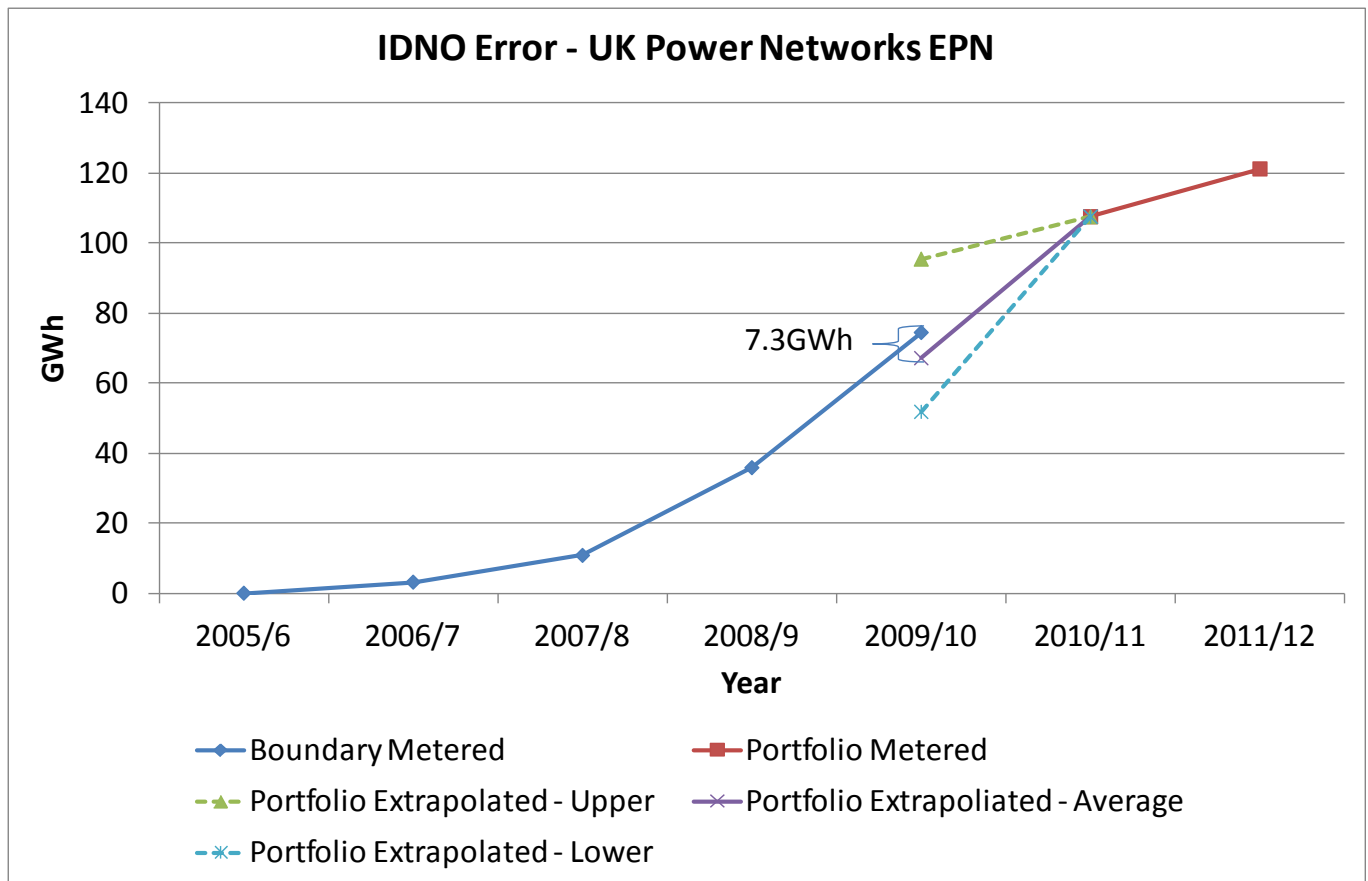
The graph below shows flows into the EPN IDNOs based on boundary metering up to the end of DPCR4 (dark blue line), and then the equivalent portfolio metering from the start of DPCR5 (dark red line).

We have taken the observed portfolio metering for 2010/11 and extrapolated this back to 2009/10 using a range of estimates for the underlying growth in IDNO demand. The graph below shows the impact of three growth rates:

² The reconciling item would be the difference between the Settlement assumed consumption of IDNO customers and the actual metered boundary flow. Some of this difference is accounted for by losses on the IDNO network.

- That observed in boundary metering between 2008/9 and 2009/10;
- That observed in portfolio metering between 20010/11 and 2011/12; and
- The average of the above.

The “Average” difference between the two values is 7.3GWh, which is more than the UKPN estimate of IDNO losses; however, reasonable uncertainty over the growth in IDNO demand between 2009/10 and 2010/11 could easily justify an “error” in the Settlement metering of IDNO consumers of between +21GWh and -22GWh. The remaining un-reconciled item of 9.8 GWh looks reasonable given this range.



2.8.4 Data Provided Under Approach C for restatement

Of the UKPN licensees, only UKPN Eastern has applied for restatement. The differences between data provided for restatement and those provided annually under SLC47 are immaterial for the purposes of restatement and hence we haven’t reviewed this further.

However, in conversations held with UKPN in reconciling settlement data where they have provided a full and clear reconciliation, it is apparent that for its 2009/10 SLC 47 annual return, UKPN applied a different approach to their standard methodology by releasing all provisions. UKPN explained that the reason for this deviation from their methodology was to comply with DPCR5 Final Proposals. UKPN have provided a time series of the level of provisions (going back as far as 2002/03). The apparent change in application of methodology in 2009/10 (releasing 241 GWh, 33GWh and 134 GWh of provisions for EPN, LPN and SPN respectively) would have had an impact of the growth term.

2.8.5 UK Power Networks – EPN Policy Issues

The key policy issues for the losses data provided in respect of the EPN Network relates to the Units Found item identified above. This has a number of issues as follows:

- **Should the adjustment be allowed:** Some commentators have questioned whether UKPN should be allowed to make an adjustment for the estimate of the error in Settlement metering in the period when Settlement data was not corrected. In deciding on this, it is of note that:
 - The UK Power Networks methodology explicitly allows an adjustment for “Units Distributed but not Processed through Settlement”. The definition of this adjustment includes units identified through disputes;
 - UK Power Networks have included such adjustments in their losses returns throughout the DPCR4 period;
 - UK Power Networks have shared presentations with us that it claims were shared with Ofgem in May 2005 and April 2009. In each case, these presentations highlight this part of its methodology (referred to as “Data Management”).
- **Should the adjustments be smeared over the years in which the units were delivered:** In applying its methodology, UK Power Networks account for all “Units Found” in the year they were found, rather than in the year the relevant electricity was delivered. For close out it is questionable whether this is correct and consistent with the intent of the close out of the DPCR4 losses incentive.

The intent of the arrangements for close out was for each DNO to account for losses in the year the relevant electricity was delivered (hence the unwinding of provisions). This would argue that the “Units Found” adjustments should be accounted for in the year those units were delivered for the DPCR4 losses incentive close out.

2.8.6 UK Power Networks – EPN Errors

The reconciliation of the losses data for UK Power Networks EPN has not identified any errors in the data as submitted by the DNO.

2.9 UK Power Networks – London (UKPN – LPN)

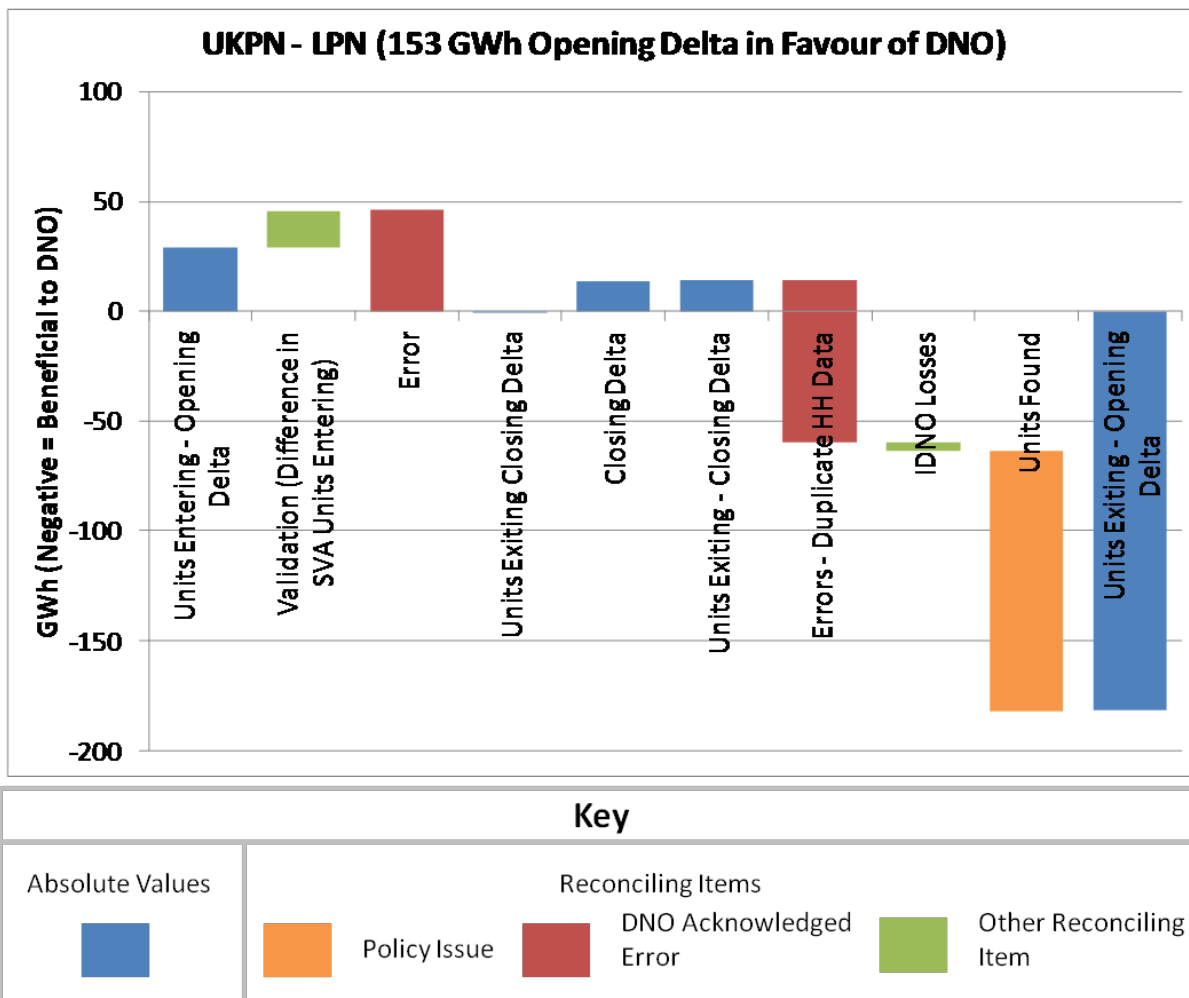
UK Power Networks operate three distribution licenses covering the South East of England. These cover the licensed areas that were operated by Eastern Electricity, London Electricity and SEEBOARD when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy Eastern Electricity network.

At the start of this process, there was an un-reconciled difference of 153GWh between the losses apparent from 2009/10 data submitted by UK Power Networks and the apparent losses derived from Settlement data, with this difference being made up as follows:

- **Units Entering UK Power Networks London Network:** UK Power Networks data showed 29 GWh more energy entering its London network than the Settlement data; and
- **Units Exiting UK Power Networks Eastern Network:** UK Power Networks data showed 182 GWh more energy exiting its network than the Settlement data.

Further investigation has reduced this un-reconciled difference to 13.5 GWh in favour of the DNO; however, It should be noted that the opening delta already incorporated an adjustment for 118 GWh, where some have questioned whether this adjustment should be allowed. This adjustment is in respect of energy where UK Power Networks found that meters had been recording inaccurately into Settlement, and had then estimated the historical effect of these metering errors.

The reconciling items are illustrated below, and discussed further in the following paragraphs.



2.9.1 Units Entering Reconciling Items

- Validation (16.35GWh):** UK Power Networks have identified a 16.35GWh difference between the units entering for half hourly metered sites between the data in their billing system and the data apparent from Settlement data. The most likely explanation of this difference is that Settlement is showing output on some SVA meters within the LPN network; however, these are not recognised as export meters by UK Power Networks. Similar errors have been observed by other DNOs, with ENWL having done the most to verify its own data (and still showing a reconciling item).
- Error (46 GWh):** In reconciling its data, UK Power Networks discovered that they had made an error in the data it submitted to Ofgem for the close-out of the DPCR4 losses incentive. This related to the Acton Lane balancing mechanism unit (BMU) that was included in the data for both CVA and SVA – so had been double counted – with these units showing erroneously for both units entering and units exiting.

2.9.2 Units Exiting Reconciling Items

- Error (74GWh):** In reconciling its data, UK Power Networks discovered that they had made errors in the data they submitted to Ofgem for the close-out of the DPCR4 losses incentive. This related to:
 - a BMU (Acton Lane) that was included in the data for both CVA and SVA – so had been double counted – with these units showing erroneously both fur units entering and units exiting; and
 - UK Power Networks have found a further example of double counting a meter in their Half Hourly data – this time with a value of 28GWh.

- **IDNO Losses (4GWh):** The losses that are apparent from Settlement data cover all electrical flows between the injection of energy into the network (at a Grid Supply Point, or by an Embedded Generator) and its withdrawal at end customer sites. Some of these flows occur over networks that are operated by independent parties (IDNOs), so it is necessary to net these flows out of the Settlement data for a correct reconciliation. In its submission, UK Power Networks netted out 83GWh for the flow into IDNOs embedded within the LPN network; however, as Settlement data is based on meters at customer sites, a further adjustment is needed to reflect losses on the IDNO network (i.e. between the boundary meter and the sites). UK Power Networks has estimated at 4 GWh based on a loss factor of 5%. This is consistent with the loss factors and approach used by other DNOs.
- **Units Found (118GWh):** Under the UK Power Networks Reporting Methodology, it has actively sought MPANs within their networks that seem to be being metered in error (e.g. through applying the wrong scaling factor) and sought to have these corrected through the disputes with the relevant Supplier or Data Collector. These have most often been resolved through bilateral disputes, without the need for recourse to a full dispute under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. UKPN have then estimated the corrections needed to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction. ESP Consulting has had sight of the workings for a number of these adjustments, and in each case they seem reasonable (See Appendix A).

2.9.3 Outstanding Delta and IDNO Metering Estimate

The reconciliation thus far for the UK Power Networks London network has an un-reconciled difference of 13.5GWh in favour of the Consumer. The following discussion considers the extent to which this difference is explained by errors in the Settlement metering of IDNO customers. To fully investigate this, we first have to add back in the 4GWh IDNO loss item³ – to give an un-reconciled difference of 9.5 GWh in favour of the consumer.

There are legitimate differences between the losses apparent from Settlement Data and that reported by the DNO based on what each assumes about the flow of energy into IDNO networks:

- During DPCR4, UK Power Networks measures the flows into each IDNO based on metered flows at the boundary between the relevant UK Power Networks and IDNO networks.
- Settlement data measures the amount of energy consumed by customers on the IDNO network, and makes no adjustment for the losses between the boundary meters and those customers.

An error in the “apparent” losses from pure Settlement data can then occur because either:

- Some of the Settlement losses apparent for the relevant DNO actually occurred on an IDNO’s network; and
- There may be errors in recording or estimating the demand of customers on the IDNO’s network.

Unfortunately, we are not able to compare the boundary meters with the total assumed consumption of IDNO connected customers on an entirely consistent basis, as the data for both is not readily accessible for the same time period:

- During DPCR4 UK Power Networks (as with most other DNOs) billed IDNOs for DUoS based on boundary meters. The IDNO customers were metered and handled through the relevant (SVA or CVA) settlement process; however, the total consumption of each IDNO’s customers was never determined as a separate total.

³ The reconciling item would be the difference between the Settlement assumed consumption of IDNO customers and the actual metered boundary flow. Some of this difference is accounted for by losses on the IDNO network.

- From the start of DPCR5, IDNOs have been billed for DUoS based on portfolio metering – which is a summation of the Settlement metered values for IDNO connected customers.

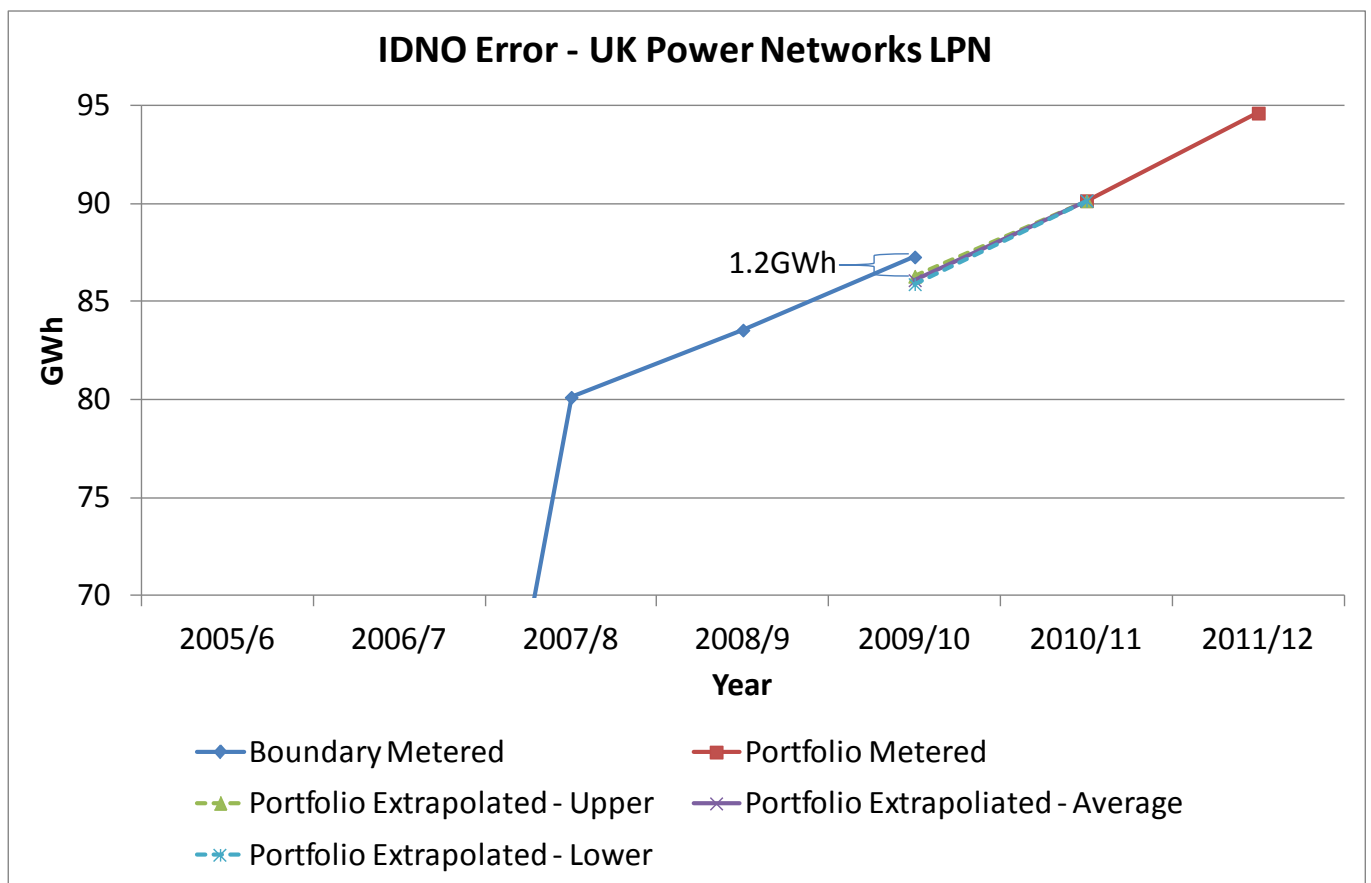
Boundary metering was introduced in response to an Ofgem view that it was discriminatory for DNOs to impose the costs of Boundary meters on IDNOs; consistent with this direction, DNOs and IDNOs generally stopped paying for data to be collected from existing boundary meters from the start of DPCR5.

The graph below shows flows into the LPN IDNOs based on boundary metering up to the end of DPCR4 (dark blue line), and then the equivalent portfolio metering from the start of DPCR5 (dark red line).

We have taken the observed portfolio metering for 2010/11 and extrapolate this back to 2009/10 using a range of estimates for the underlying growth in IDNO demand. The graph below shows the impact of three growth rates:

- That observed in boundary metering between 2008/9 and 2009/10;
- That observed in portfolio metering between 2010/11 and 2011/12; and
- The average of the above.

The “Average” difference between the two values is 1.2GWh. This is low, and unlikely to explain the remaining delta in the UKPN data. It is more likely that the IDNO meter data is broadly correct, with differences being driven by losses on the relevant IDNO networks.



2.9.4 UK Power Networks – LPN Policy Issues

The key policy issues for the losses data provided in respect of the LPN Network relates to the Units Found item identified above. This has a number of issues as follows:

- **Should the adjustment be allowed:** Some commentators have questioned whether UKPN should be allowed to make an adjustment for the estimate of the error in Settlement metering in the period when Settlement data was not corrected. In deciding on this, it is of note that:
 - The UK Power Networks methodology explicitly allows an adjustment for “Units Distributed but not Processed through Settlement”. The definition of this adjustment includes units identified through disputes;
 - UK Power Networks have included such adjustments in their losses returns throughout the DPCR4 period;
 - UK Power Networks have shared presentations with us that it claims were shared with Ofgem in May 2005 and April 2009. In each case, these presentations highlight this part of its methodology (referred to as “Data Management”).
- **Should the adjustments be smeared over the years in which the units were delivered:** In applying its methodology, UK Power Networks account for all “Units Found” in the year they were found, rather than in the year the relevant electricity was delivered. For close out it is questionable whether this is correct and, consistent with the intent of the close out of the DPCR4 losses incentive.

The intent of the arrangements for close out is for each DNO to account for losses in the year the relevant electricity was delivered (hence the unwinding of provisions). This would argue that the “Units Found” adjustments should be accounted for in the year those units were delivered for the DPCR4 losses incentive close out.

2.9.5 UK Power Networks – LPN Errors

In reconciling their data, UK Power Networks have discovered a number of errors relating to the data the submitted in respect of the LPN DNO for the close-out of the DPCR4 losses incentive. These relate to the double counting of metering from some sites.

UK Power Networks have confirmed that these errors will also have impacted their close-out submissions for other years within DPCR4, and offered to re-submit their data.

2.10 UK Power Networks – South East (UKPN – SPN)

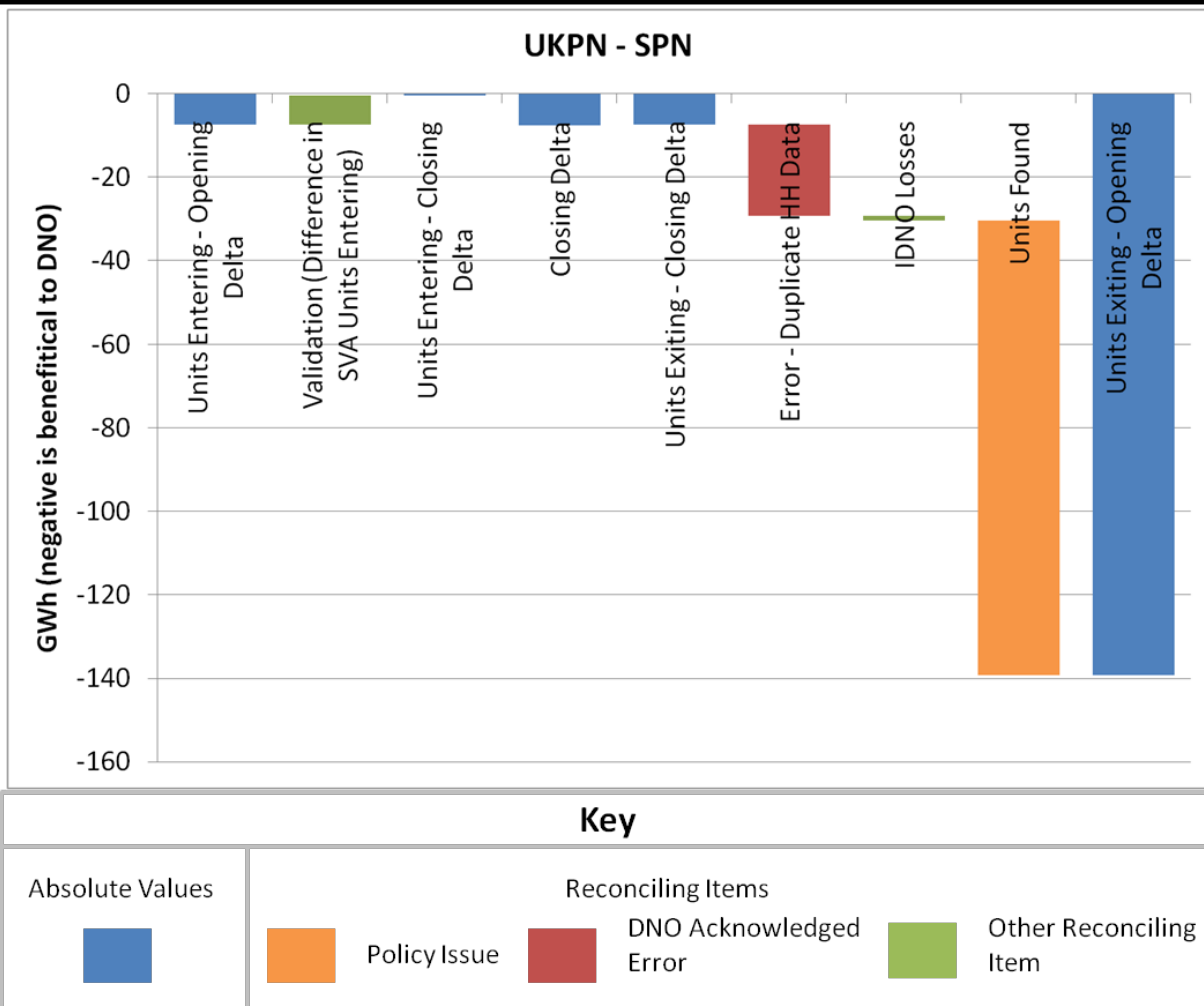
UK Power Networks operate three distribution licenses covering the South East of England. These cover the licensed areas that were operated by Eastern Electricity, London Electricity and SEEBOARD when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy SEEBOARD network.

At the start of this process, there was an un-reconciled difference of 146GWh between the losses apparent from 2009/10 data submitted by UK Power Networks and the apparent losses derived from Settlement data, with this difference being made up as follows:

- **Units Entering UK Power Networks South Eastern Network:** UK Power Networks data showed 7.3 GWh less energy entering its South Eastern network than the Settlement data; and
- **Units Exiting UK Power Networks South Eastern Network:** UK Power Networks data showed 139 GWh more energy exiting its network than the Settlement data.

Further investigation has reduced this un-reconciled difference to 7.6 GWh in favour of the DNO; however, it should be noted that the opening delta already incorporated an adjustment for 109 GWh, where some have questioned whether this adjustment should be allowed. This adjustment is in respect of energy where UK Power Networks found that meters had been recording inaccurately into Settlement, and had then estimated the historic effect of these metering errors.

The reconciling items are illustrated below, and discussed further in the following paragraphs.



2.10.1 Units Entering Reconciling Items

- Validation (7.2GWh):** UK Power Networks have identified a 7.2GWh difference between the units entering for half hourly metered sites between the data in their billing system and the data apparent from Settlement data. The most likely explanation of this difference is that Settlement is showing output on some SVA meters within the SPN network; however, these are not recognised as export meters by UK Power Networks. Similar errors have been observed by other DNOs.

2.10.2 Units Exiting Reconciling Items

- Error (22GWh):** In reconciling its data, UK Power Networks discovered that it had made an error in the data it submitted to Ofgem for the close-out of the DPCR4 losses incentive. This related to the double counting of some meter values within their half-hourly data stream.
- IDNO Losses (0.7GWh):** The losses that are apparent from Settlement data cover all electrical flows between the injection of energy into the network (at a Grid Supply Point, or by an Embedded Generator) and its withdrawal at end customer sites. Some of these flows occur over networks that are operated by independent parties (IDNOs), so it is necessary to net these flows out of the Settlement data for a correct reconciliation. In its submission, UK Power Networks netted out 16GWh for the flow into IDNOs embedded within the SPN network; however, as Settlement data is based on meters at customer sites, a further adjustment is needed to reflect losses on the IDNO network (i.e. between the boundary meter and the sites). UK Power Networks has estimated these at 0.7 GWh based on a loss factor of 5%. This is consistent with the loss factors and approach used by other DNOs.

- **Units Found (109GWh):** Under the UK Power Networks Reporting Methodology, it has actively sought MPANs within their networks that seem to be being metered in error (e.g. through applying the wrong scaling factor) and sought to have these corrected through the disputes with the relevant Supplier or Data Collector. These have most often been resolved through bilateral disputes, without the need for recourse to a full dispute under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. UKPN have then estimated the corrections needed to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction. ESP Consulting has had sight of the workings for a number of these adjustments, and in each case they seem reasonable (see Appendix A).

2.10.3 Outstanding Delta and IDNO Metering Estimate

The reconciliation thus far for the UK Power Networks South Eastern network has an un-reconciled difference of 7.6GWh in favour of the DNO. The following discussion considers the extent to which this difference is explained by errors in the Settlement metering of IDNO customers. To fully investigate this, we first have to add back in the 0.75GWh IDNO loss item⁴ – to give an un-reconciled difference of 8.3 GWh in favour of the DNO.

There are legitimate differences between the losses apparent from Settlement Data and that reported by the DNO based on what each assumes about the flow of energy into IDNO networks:

- During DPCR4, UK Power Networks measures the flows into each IDNO based on metered flows at the boundary between the relevant UK Power Networks and IDNO networks.
- Settlement data measures the amount of energy consumed by customers on the IDNO network, and makes no adjustment for the losses between the boundary meters and those customers.

An error in the “apparent” losses from pure Settlement data can then occur because either:

- Some of the Settlement losses apparent for the relevant DNO actually occurred on an IDNO’s network; and
- There may be errors in recording or estimating the demand of customers on the IDNO’s network.

Unfortunately, we are not able to compare the boundary meters with the total assumed consumption of IDNO connected customers on an entirely consistent basis, as the data for both is not readily accessible for the same time period:

- During DPCR4 UK Power Networks (as with most other DNOs) billed IDNOs for DUoS based on boundary meters. The IDNO customers were metered and handled through the relevant (SVA or CVA) settlement process; however, the total consumption of each IDNO’s customers was never determined as a separate total.
- From the start of DPCR5, IDNOs have been billed for DUoS based on portfolio metering – which is a summation of the Settlement metered values for IDNO connected customers.

Boundary metering was introduced in response to an Ofgem view that it was discriminatory for DNOs to impose the costs of Boundary meters on IDNOs; consistent with this direction, DNOs and IDNOs generally stopped paying for data to be collected from existing boundary meters from the start of DPCR5.

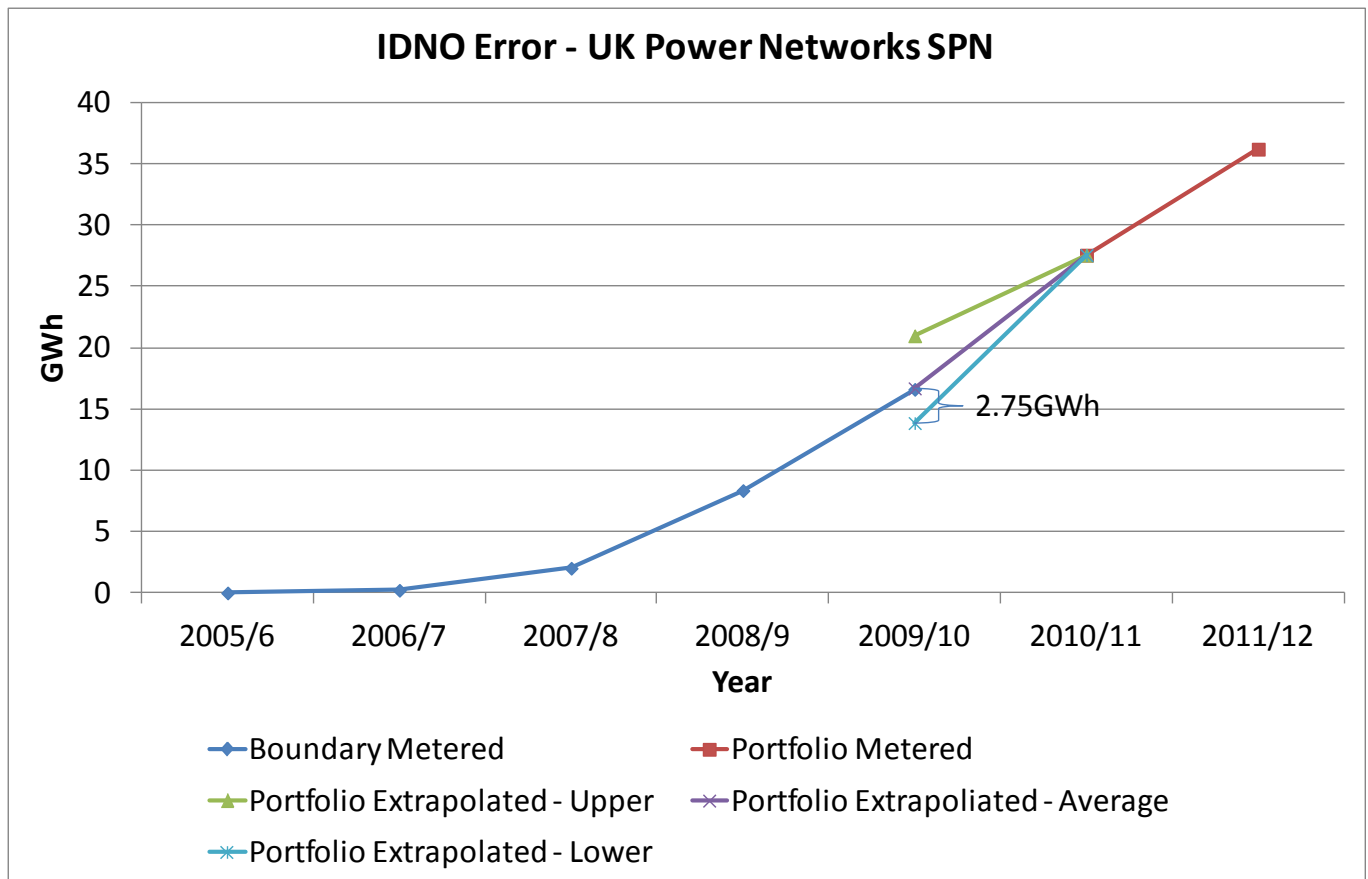
The graph below shows flows into the SPN IDNOs based on boundary metering up to the end of DPCR4 (dark blue line), and then the equivalent portfolio metering from the start of DPCR5 (dark red line).

⁴ The reconciling item would be the difference between the Settlement assumed consumption of IDNO customers and the actual metered boundary flow. Some of this difference is accounted for by losses on the IDNO network.

We have taken the observed portfolio metering for 2010/11 and extrapolate this back to 2009/10 using a range of estimates for the underlying growth in IDNO demand. The graph below shows the impact of three growth rates:

- That observed in boundary metering between 2008/9 and 2009/10;
- That observed in portfolio metering between 2010/11 and 2011/12; and
- The average of the above.

Based on these growth figures, errors in metering of IDNO customers would explain up to 2.75GWh of that 8.3GWh difference, with a balance of 5.5GWh to explain.



2.10.4 UK Power Networks – SPN Policy Issues

The key policy issues for the losses data provided in respect of the SPN Network relates to the Units Found item identified above. This has a number of issues as follows:

- **Should the adjustment be allowed:** Some commentators have questioned whether UKPN should be allowed to make an adjustment for the estimate of the error in Settlement metering in the period when Settlement data was not corrected. In deciding on this, it is of note that:
 - The UK Power Networks methodology explicitly allows an adjustment for “Units Distributed but not Processed through Settlement”. The definition of this adjustment includes units identified through disputes;
 - UK Power Networks have included such adjustments in their losses returns throughout the DPCR4 period; and

- UK Power Networks have shared presentations with us that it claims were shared with Ofgem in May 2005 and April 2009. In each case, these presentations highlight this part of its methodology (referred to as “Data Management”).
- **Should the adjustments be smeared over the years in which the units were delivered:** In applying its methodology, UK Power Networks account for all “Units Found” in the year they were found, rather than in the year the relevant electricity was delivered. For close out it is questionable whether this is correct and consistent with the intent of the close out of the DPCR4 losses incentive.

We interpret the intent of the arrangements for close out to be for each DNO to account for losses in the year the relevant electricity was delivered (hence the unwinding of provisions). This would argue that the “Units Found” adjustments should be accounted for in the year those units were delivered for the DPCR4 losses incentive close out.

2.10.5 UK Power Networks – SPN Errors

In reconciling their data, UK Power Networks have discovered a number of errors relating to the data the submitted in respect of the SPN DNO for the close-out of the DPCR4 losses incentive. These relate to the double counting of metering from some sites.

UK Power Networks have confirmed that this error will also have impacted their close-out submissions for other years within DPCR4, and offered to re-submit their data.

2.11 Western Power Distribution (WPD) - East Midlands

Western Power Distribution operates four distribution licenses covering the South West and Midlands of England and the South of Wales. These cover the licensed areas that were operated by SWEB, MEB, EMEB and SWALEC when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy EMEB network.

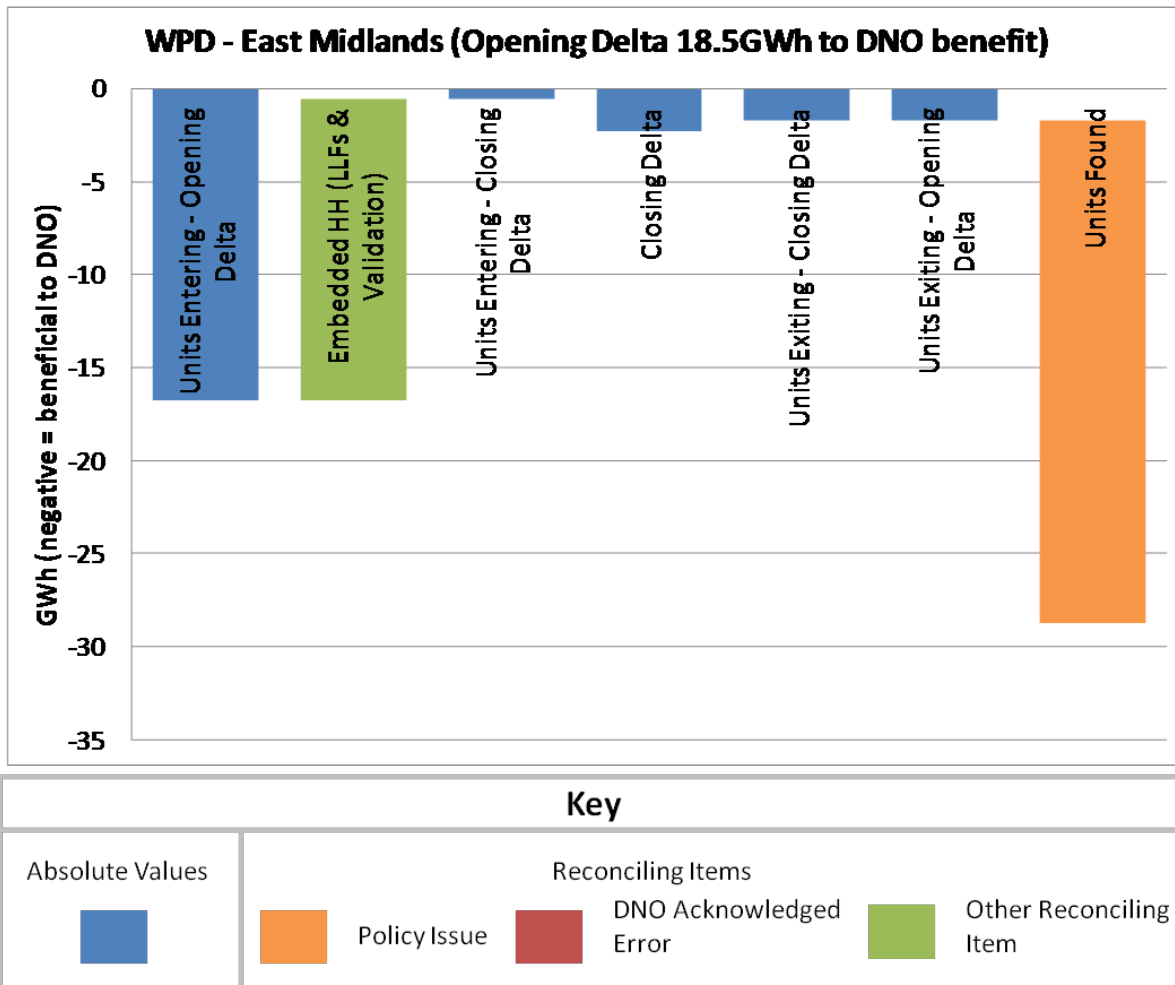
At the start of this process, there was an un-reconciled difference of 18.5GWh between the losses apparent from 2009/10 data submitted by WPD and the apparent losses derived from Settlement data, with this difference being made up as follows:

- **Units Entering WPD's East Midlands network:** WPD data showed 16.8 GWh less energy entering its Northern network than the Settlement data; and
- **Units Exiting WPD's East Midlands Networks:** WPD data showed 1.7GWh more energy exiting its network than the Settlement data.

Further investigation has reduced this un-reconciled difference to 2.3GWh; however:

- This remaining difference can largely be explained by errors in the Settlement metering of consumption within IDNO networks; and
- It should be noted that the opening delta already incorporated an adjustment for 27GWh, where it is debatable whether this adjustment was consistent with the relevant losses reporting methodology. This adjustment is in respect of energy where WPD found that meters had been recording inaccurately into Settlement, and had then estimated the historic effect of these metering errors.

The reconciling items are illustrated below, and discussed further in the following paragraphs.



2.11.1 Units Entering Reconciling Items

- Embedded Generation (16.2GWh):** WPD have compared the embedded generation half-hourly metered data in Settlements with that in their billing system and found a difference of 16.2GWh. Of this, they can demonstrate that 14.5GWh is metered generation that shows in Settlement on de-energised MPANs (against current Market Domain Data).

2.11.2 Units Exiting Reconciling Items

- Units Found (27GWh):** WPD had previously explained to Ofgem that its data needed a 29GWh adjustment to reflect the effect of its “Losses Project”. Without this reconciling item, the Units Exiting opening delta would have been 29GWh, and the total opening delta 45GWh – in both cases in the DNO’s favour.

Under the WPD “Losses project”, it has identified MPANs within their networks that seem to be being metered in error (e.g. through applying the wrong scaling factor) and sought to have these corrected through the formal disputes under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. WPD have then estimated the corrections needed to be made to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction.

2.11.3 Outstanding Delta and IDNO Metering Estimate

The reconciliation thus far for the WPD East Midlands Network has an un-reconciled difference of 2.3GWh in favour of the DNO. As illustrated below, investigation of portfolio metering for the IDNOs embedded within the East Midlands Network suggest that errors for this metering could easily account for this remaining reconciling item.

There are legitimate differences between the losses apparent from Settlement Data and that reported by the DNO based on what each assumes about the flow of energy into IDNO networks:

- During DPCR4, WPD measures the flows into each IDNO based on metered flows at the boundary between the relevant WPD and IDNO networks.
- Settlement data measures the amount of energy consumed by customers on the IDNO network, and makes no adjustment for the losses between the boundary meters and those customers.

An error in the “apparent” losses from pure Settlement data can then occur because either:

- Some of the Settlement losses apparent for the relevant DNO actually occurred on an IDNO’s network; and
- There may be errors in recording or estimating the demand of customers on the IDNO’s network.

Unfortunately, we are not able to compare the boundary meters with the total assumed consumption of IDNO connected customers on an entirely consistent basis, as the data for both is not readily accessible for the same time period:

- During DPCR4 WPD (as with most other DNOs) billed IDNOs for DUoS based on boundary meters. The IDNO customers were metered and handled through the relevant (SVA or CVA) settlement process; however, the total consumption of each IDNO’s customers was never determined as a separate total.
- From the start of DPCR5, IDNOs have been billed for DUoS based on portfolio metering – which is a summation of the Settlement metered values for IDNO connected customers.

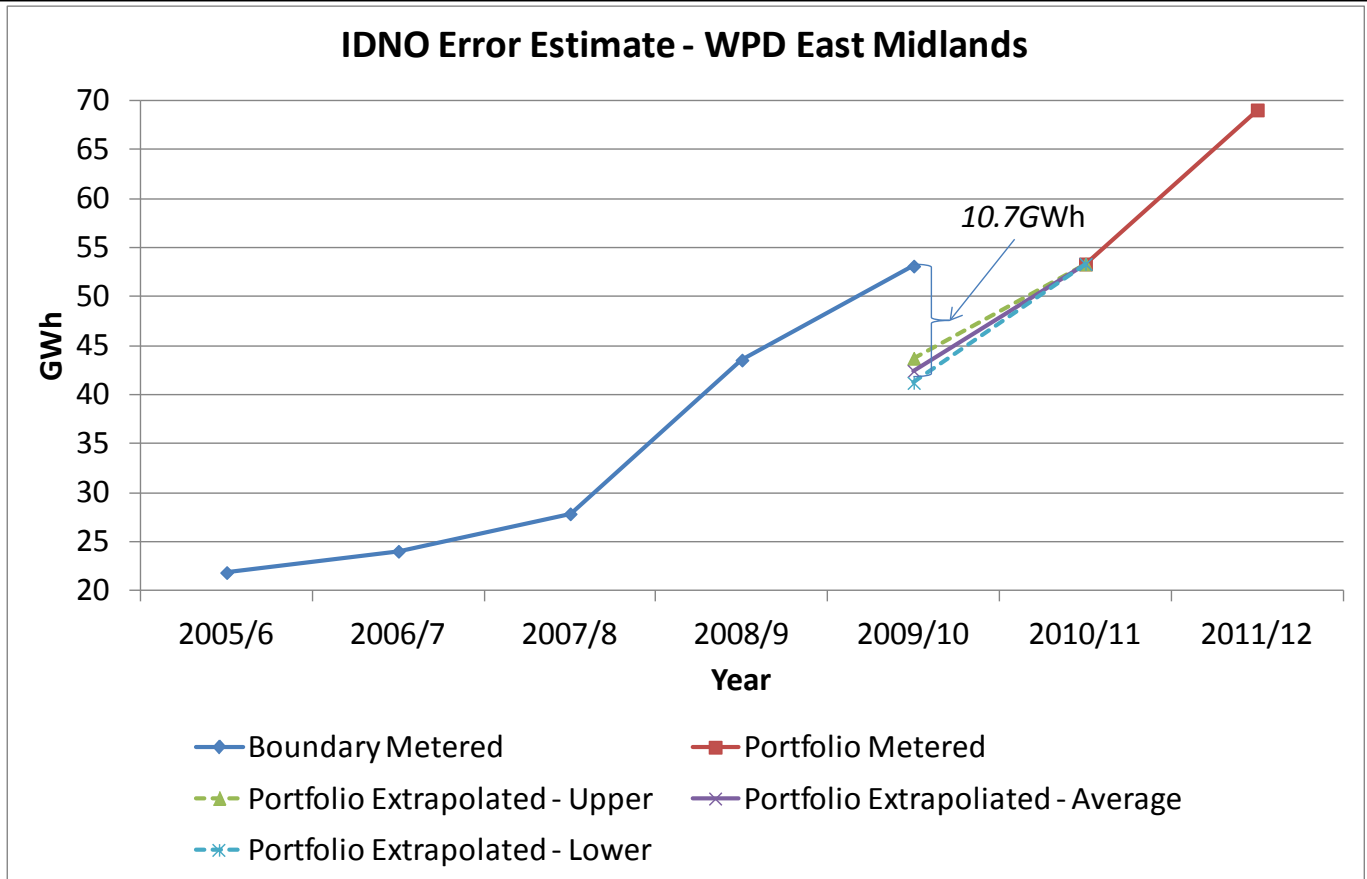
Boundary metering was introduced in response to an Ofgem view that it was discriminatory for DNOs to impose the costs of Boundary meters on IDNOs; consistent with this direction, DNOs and IDNOs generally stopped paying for data to be collected from existing boundary meters from the start of DPCR5.

The graph below shows flows into the East Midland IDNOs based on boundary metering up to the end of DPCR4 (dark blue line), and then the equivalent portfolio metering from the start of DPCR5 (dark red line). It is clear that the portfolio metering is significantly lower than the boundary metering – which would have given an apparent increase in the losses on the East Midlands network when looking at Settlement Data.

WPD have taken the observed portfolio metering for 2010/11 and extrapolate this back to 2009/10 using a range of estimates for the underlying growth in IDNO demand. The graph below shows the impact of three growth rates:

- That observed in boundary metering between 2008/9 and 2009/10;
- That observed in portfolio metering between 2010/11 and 2011/12; and
- The average of the above.

This gives a range of errors between 9.4GWh and 11.9GWh, which more than explains the 2.3GWh remaining un-reconciled item.



2.11.4 Data Provided Under Approach C for restatement

In providing data to Ofgem for restatement of prior losses performance, WPD have provided two sets of data:

- One based upon a fully reconciled set of billed data (effectively approach A).
- One based upon billed data which was created using the fully reconciled set of data with subsequent reconciliations ‘time-shifted’ to move the units to when they would have been billed (provided by WPD as being under approach C).

In providing both sets of data, WPD have used fully reconciled HH data for both approaches above. Neither of these approaches aligns with the historic methodology reported under SLC47 which was as follows:

- For S Wales and S West, WPD left open the year end to include reconciliations in subsequent months up to June billing each year.
- For East and West Midlands, their methodology initially accounted for NHH units on a corrected basis i.e. after application of the GSP Group Correction Factor and used provisions to defer the recognition of differences between corrected and uncorrected NHH units. These provisions were released after 4 years (East Midlands) and 3 years (West Midlands) respectively.

WPD have provided a full explanation to Ofgem and ESP on 12 March as to their rationale for providing data as outlined above, contrary to their historic methodology.

2.11.5 WPD East Midlands Policy Issues

WPD have reduced their reported losses, post 2010 reporting, in respect of the East Midlands network to account for “units found”. These are units that have been identified through the WPD “Losses project”, where it has identified MPANs within their networks that seem to be being metered in error (e.g. through applying the wrong

scaling factor) and sought to have these corrected through the formal disputes under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. WPD have then estimated the corrections needed to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction. This leads to a retrospective adjustment for prior periods during which the error is deemed to have persisted.

The policy issue is whether this adjustment is allowed in the losses reporting methodology for this network. There are two factors to consider here:

- **WPD Dispute whether it is allowed:** In discussions, WPD have acknowledged that such adjustments are not explicitly permitted by their method, but have equally noted that neither are they explicitly precluded;
- **Agreed change in reporting practice:** WPD have acknowledged that the including of these adjustments is a change in the practice and application of the losses reporting methodology for the East Midlands from that which formed the basis for reporting during the DPCR4 period.

2.11.6 WPD East Midlands – Errors

The reconciliation of the losses data for WPD East Midlands has not identified any errors in the data as submitted by the DNO.

2.12 Western Power Distribution (WPD) – South Wales

Western Power Distribution operates four distribution licenses covering the South West and Midlands of England and the South of Wales. These cover the licensed areas that were operated by SWEB, MEB, EMEB and SWALEC when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy SWALEC network.

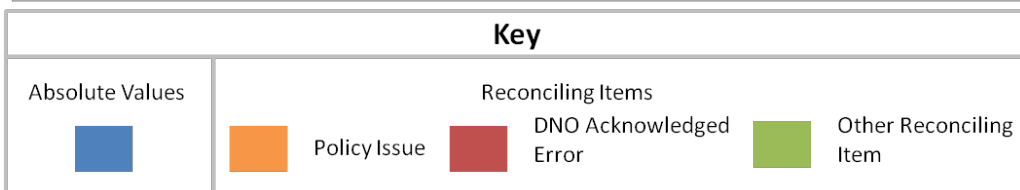
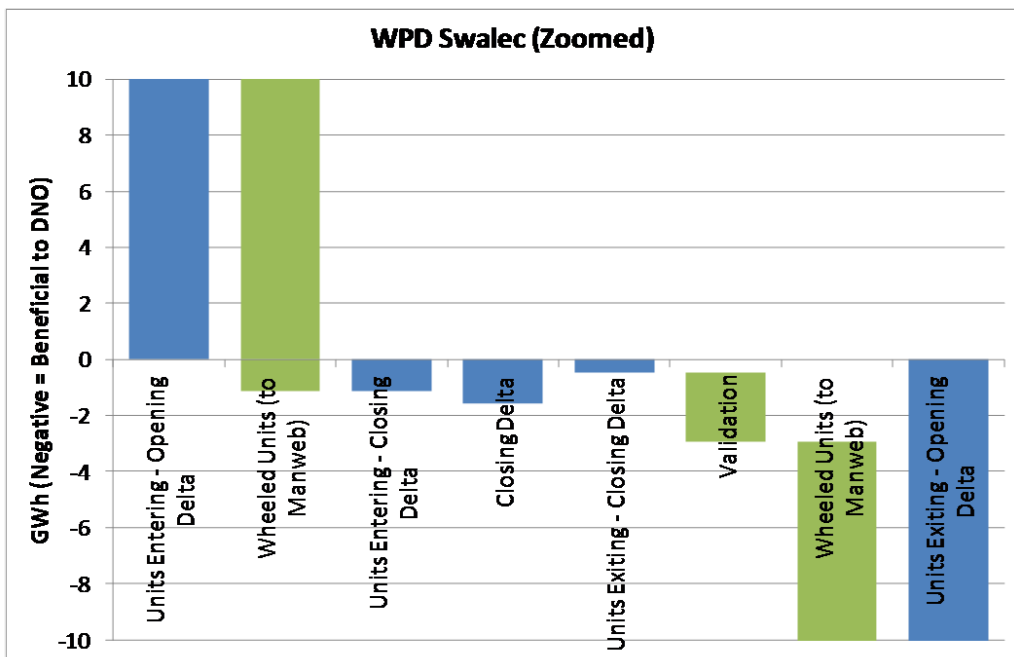
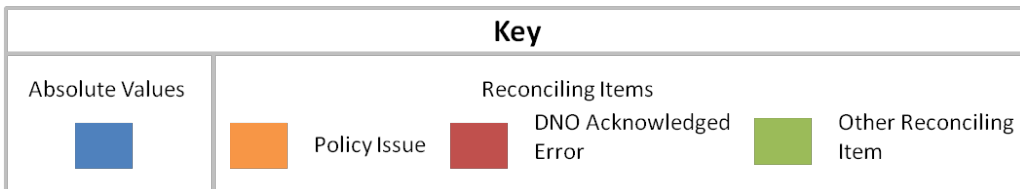
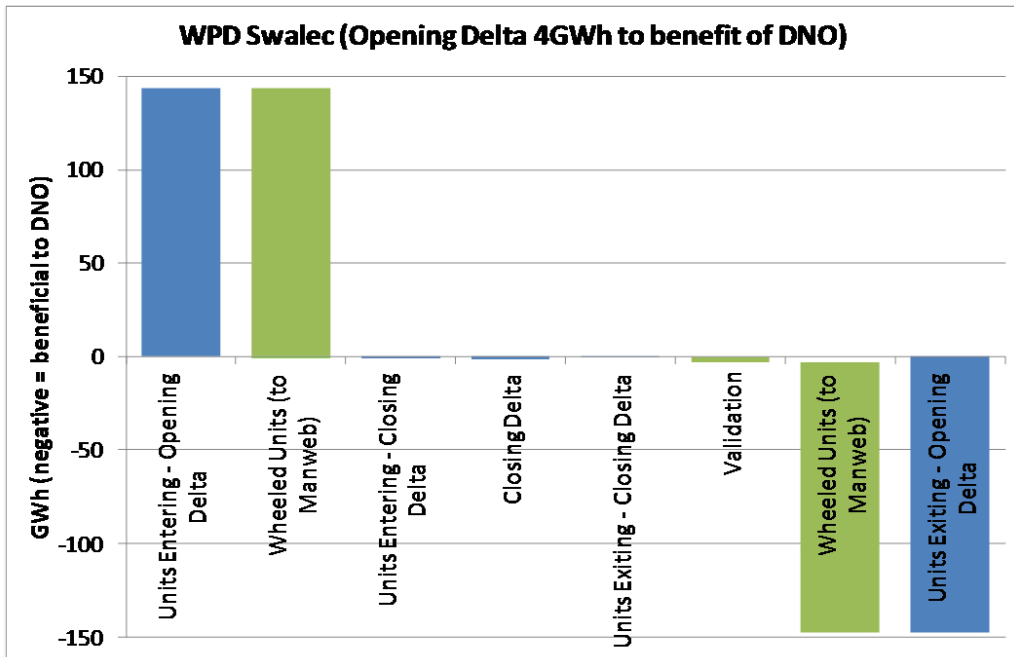
At the start of this process, there was an un-reconciled difference of 4GWh between the losses apparent from 2009/10 data submitted by WPD and the apparent losses derived from Settlement data, with this difference being made up as follows:

- **Units Entering WPD's South Wales network:** WPD data showed 144 GWh more energy entering its South Wales network than the Settlement data; and
- **Units Exiting WPD's South Wales Networks:** WPD data showed 148 GWh more energy exiting its network than the Settlement data.

Further investigation has reduced this un-reconciled difference to 1.6 GWh; however, this could easily be explained by errors in the Settlement consumption data for customers connected to IDNO networks.

The reconciling items are illustrated below, and discussed further in the following paragraphs. This reconciliation is dominated by the “wheeling” of power across the SWALEC network for use in Manweb's network. For this reason, we have shown two graphs:

- The first shows the full reconciliation;
- The second has zoomed in the “y” axis to give a better view of the remaining reconciling items.



2.12.1 Units Entering Reconciling Items

- **Wheeled Units to Manweb (145GWh):** 145GWh of the energy that entered the South Wales network was exported directly to the North Wales part of the Manweb network. As such, there is an equivalent adjustment to both units entering and units exiting to account for the wheeled units.

2.12.2 Units Exiting Reconciling Items

- **Validation (2.5 GWh):** WPD have compared the units showing in settlement with those they actually billed, and highlight a difference of 2.5 GWh. They have not been able to explain why this data is different, and assume that it due to differences in the validation of meter data in their systems and Settlement. It is, however, notable that:
 - The direction of the error suggests that WPD billed users (for DUoS) less than it could have done;
 - DNOs' had an incentive (through the growth term) in DPCR4 to maximise their billings;
 - The DNO's billing data has been accepted by the relevant customers.
- **Wheeled Units to Manweb (145GWh):** 145GWh of the energy that entered the South Wales network was exported directly to the North Wales part of the Manweb network. As such, there is an equivalent adjustment to both units entering and units exiting to account for the wheeled units.

2.12.3 Outstanding Delta and IDNO Metering Estimate

The reconciliation thus far for the WPD South Wales Network has an un-reconciled difference of 1.6GWh in favour of the DNO. As illustrated below, investigation of portfolio metering for the IDNOs embedded within the South Wales Network suggest that errors for this metering could easily account for this remaining reconciling item. Indeed, it can easily be argued that IDNO errors could place the remaining error anywhere between 14.4GWh in the Consumers favour and 16.6GWh in favour of the DNO.

There are legitimate differences between the losses apparent from Settlement Data and that reported by the DNO based on what each assumes about the flow of energy into IDNO networks:

- During DPCR4, WPD measures the flows into each IDNO based on metered flows at the boundary between the relevant WPD and IDNO networks.
- Settlement data measures the amount of energy consumed by customers on the IDNO network, and makes no adjustment for the losses between the boundary meters and those customers.

An error in the “apparent” losses from pure Settlement data can then occur because either:

- Some of the Settlement losses apparent for the relevant DNO actually occurred on an IDNO's network; and
- There may be errors in recording or estimating the demand of customers on the IDNO's network.

Unfortunately, we are not able to compare the boundary meters with the total assumed consumption of IDNO connected customers on an entirely consistent basis, as the data for both is not readily accessible for the same time period:

- During DPCR4 WPD (as with most other DNOs) billed IDNOs for DUoS based on boundary meters. The IDNO customers were metered and handled through the relevant (SVA or CVA) settlement process; however, the total consumption of each IDNO's customers was never determined as a separate total.
- From the start of DPCR5, IDNOs have been billed for DUoS based on portfolio metering – which is a summation of the Settlement metered values for IDNO connected customers.

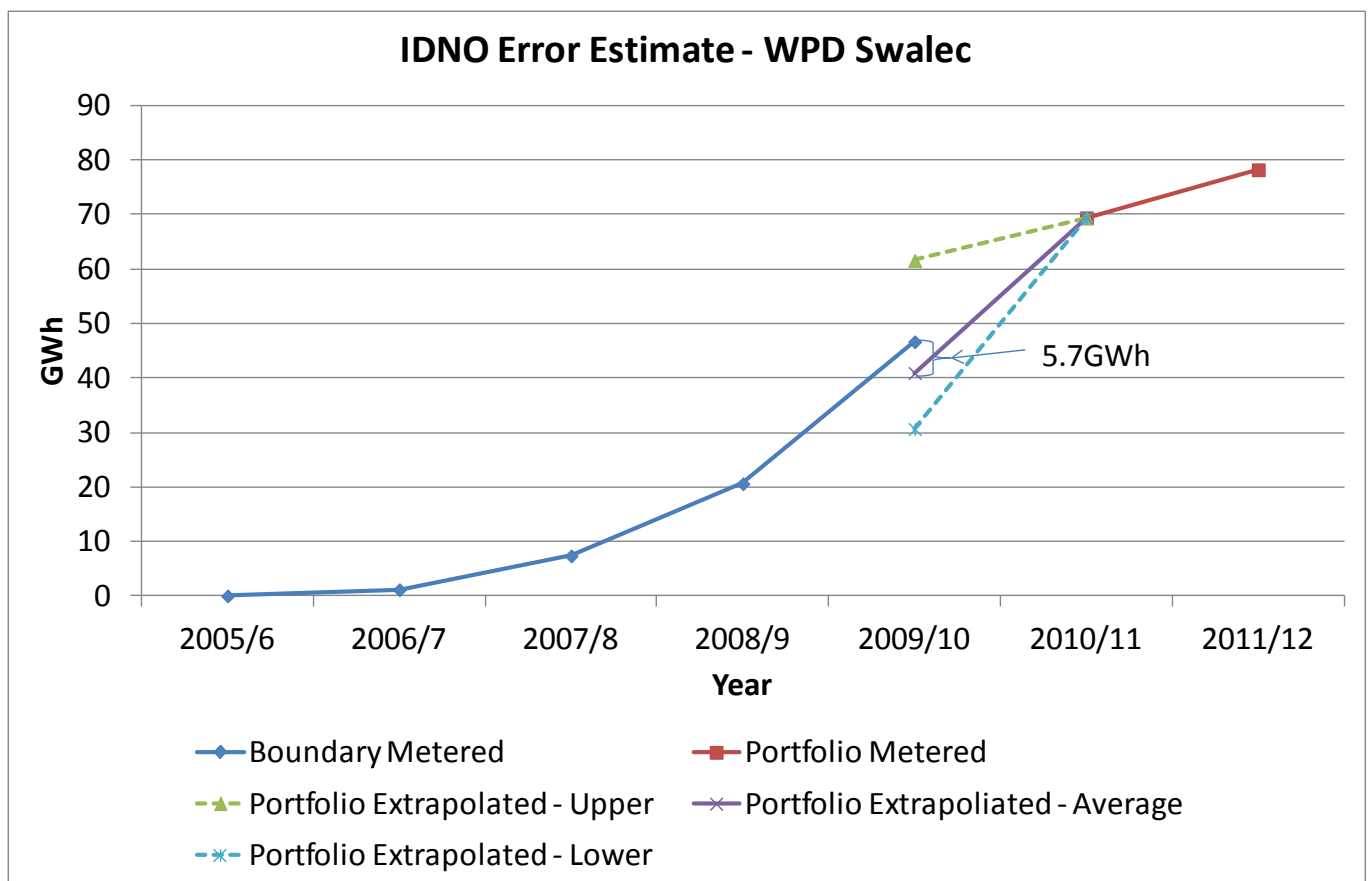
Boundary metering was introduced in response to an Ofgem view that it was discriminatory for DNOs to impose the costs of Boundary meters on IDNOs; consistent with this direction, DNOs and IDNOs generally stopped paying for data to be collected from existing boundary meters from the start of DPCR5.

The graph below shows flows into the South Wales IDNOs based on boundary metering up to the end of DPCR4 (dark blue line), and then the equivalent portfolio metering from the start of DPCR5 (dark red line). It is clear that the portfolio metering is significantly lower than the boundary metering – which would have given an apparent increase in the losses on the South Wales network when looking at Settlement Data.

WPD have taken the observed portfolio metering for 2010/11 and extrapolate this back to 2009/10 using a range of estimates for the underlying growth in IDNO demand. The graph below shows the impact of three growth rates:

- That observed in boundary metering between 2008/9 and 2009/10;
- That observed in portfolio metering between 2010/11 and 2011/12; and
- The average of the above.

This gives a range of errors between settlement under-estimating consumption by 16GWh, and overestimating consumption by 15GWh, which more than explains the 1.6GWh remaining un-reconciled item.



2.12.4 Data Provided Under Approach C for restatement

In providing data to Ofgem for restatement of prior losses performance, WPD have provided two sets of data:

- One based upon a fully reconciled set of billed data (effectively approach A); and

- One based upon billed data which was created using the fully reconciled set of data with subsequent reconciliations ‘time-shifted’ to move the units to when they would have been billed (provided by WPD as being under approach C).

In providing both sets of data, WPD have used fully reconciled HH data for both approaches above. Neither of these approaches aligns with the historic methodology reported under SLC47 which was as follows:

- For S Wales and S West, WPD left open the year end to include reconciliations in subsequent months up to June billing each year
- For East and West Midlands, their methodology initially accounted for NHH units on a corrected basis i.e. after application of the GSP Group Correction Factor and used provisions to defer the recognition of differences between corrected and uncorrected NHH units. These provisions were released after 4 years (East Midlands) and 3 years (West Midlands) respectively.

WPD have provided a full explanation to Ofgem and ESP on 12 March as to their rationale for providing data as outlined above, contrary to their historic methodology.

2.12.5 WPD South Wales Policy Issues

WPD have reduced their reported losses in respect of the South Wales network to account for “units found”. These are units that have been identified through the WPD “Losses project”, where it has identified MPANs within their networks that seem to be being metered in error (e.g. through applying the wrong scaling factor) and sought to have these corrected through the formal disputes under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. WPD have then estimated the corrections needed to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction.

The policy issue is whether this adjustment is allowed in the losses reporting methodology for this network. There are two factors to consider here:

- **WPD dispute whether it is allowed:** In discussions, WPD have acknowledged that such adjustments are not explicitly permitted by their method, but have equally noted that neither are they explicitly precluded;
- **Was part of practice for previous reports:** Adjustments of this type have, for the South West and South Wales, been incorporated in WPD’s routine reporting of losses throughout DPCR4 (albeit focused on inventory for un-metered supplies). These were consistently part of its practice in applying its losses reporting methodology. In addition to this, WPD found a further 0.01GWh⁵ for 2010 using a different process to that routinely applied during DPCR4.. As this 0.01GWh was found using a different process, it is debatable whether it is consistent with their reporting practiceduring DPCR4, specifically:
 - During DPCR4, WPD were “finding” units by checking the inventories for unmetered supplies (with those units then entered as a manual adjustment to the losses calculation); and
 - Post DPCR4, WPD initiated a “Losses Project” to identify MPANs with the wrong current transformer (CT) ratio (which leads to the “raw” meter value being scaled incorrectly for use in Settlement).

2.12.6 WPD South Wales – Errors

We are not aware of any errors in the data submitted in respect of the WPD South Wales network

⁵ Given its small size, this is not shown in the above graph.

2.13 Western Power Distribution (WPD) – South West

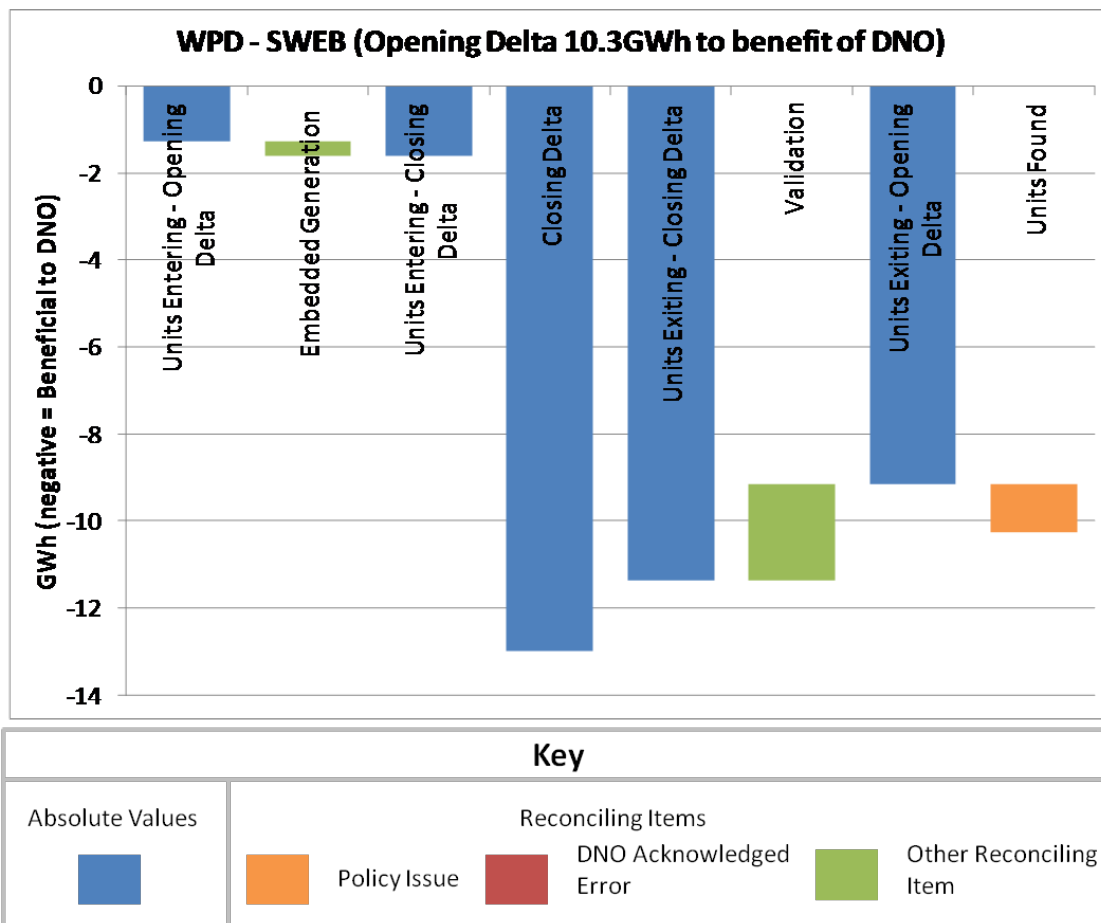
Western Power Distribution operates four distribution licenses covering the South West and Midlands of England and the South of Wales. These cover the licensed areas that were operated by SWEB, MEB, EMEB and SWALEC when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy SWEB network.

At the start of this process, there was an un-reconciled difference of 10.3GWh between the losses apparent from 2009/10 data submitted by WPD and the apparent losses derived from Settlement data, with this difference being made up as follows:

- **Units Entering WPD’s South West network:** WPD data showed 1.3 GWh less energy entering its South West network than the Settlement data; and
- **Units Exiting WPD’s South West Network:** WPD data showed 9 GWh more energy exiting its network than the Settlement data.

Further investigation has changed this un-reconciled difference to 13 GWh; however, this could easily be explained by errors in the Settlement consumption data for customers connected to IDNO networks.

The reconciling items are illustrated below, and discussed further in the following paragraphs.



2.13.1 Units Entering Reconciling Items

- **Embedded Generation (0.3GWh):** WPD have compare the embedded generation half-hourly metered data in Settlements with that in their billing system and found a difference of 0.3GWh.

2.13.2 Units Exiting Reconciling Items

- **Validation (2GWh):** WPD have compared the units showing in settlement with those they actually billed, and highlight a difference of 2GWh. They have not been able to explain why this data is different, and assume that it due to differences in the validation of meter data in their systems and Settlement. It is, however, notable that:
 - The direction of the error suggests that WPD billed users (for DUoS) more than it could have done; and
 - The DNO's billing data has been accepted by the relevant customers.
- **Units Found (1.1GWh):** WPD had previous explained to Ofgem that its data needed a 1.1GWh adjustment to reflect the effect of its "Losses Project". Without this reconciling item, the Units Exiting opening delta would have been 10.1GWh, and the total opening delta 11.6GWh – in both cases in the DNO's favour.

Under the WPD "Losses project", it has identified MPANs within their networks that seem to be being metered in error (e.g. through applying the wrong scaling factor) and sought to have these corrected through the formal disputes under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. WPD have then estimated the corrections needed to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction.

2.13.3 Outstanding Delta and IDNO Metering Estimate

The reconciliation thus far for the WPD South West Network has an un-reconciled difference of 13GWh in favour of the DNO. As illustrated below, investigation of portfolio metering for the IDNOs embedded within the South West Network suggest that errors for this metering could easily account for this remaining reconciling item.

There are legitimate differences between the losses apparent from Settlement Data and that reported by the DNO based on what each assumes about the flow of energy into IDNO networks:

- During DPCR4, WPD measures the flows into each IDNO based on metered flows at the boundary between the relevant WPD and IDNO networks.
- Settlement data measures the amount of energy consumed by customers on the IDNO network, and makes no adjustment for the losses between the boundary meters and those customers.

An error in the "apparent" losses from pure Settlement data can then occur because either:

- Some of the Settlement losses apparent for the relevant DNO actually occurred on an IDNO's network; and
- There may be errors in recording or estimating the demand of customers on the IDNO's network.

Unfortunately, we are not able to compare the boundary meters with the total assumed consumption of IDNO connected customers on an entirely consistent basis, as the data for both is not readily accessible for the same time period:

- During DPCR4 WPD (as with most other DNOs) billed IDNOs for DUoS based on boundary meters. The IDNO customers were metered and handled through the relevant (SVA or CVA) settlement process; however, the total consumption of each IDNO’s customers was never determined as a separate total.
- From the start of DPCR5, IDNOs have been billed for DUoS based on portfolio metering – which is a summation of the Settlement metered values for IDNO connected customers.

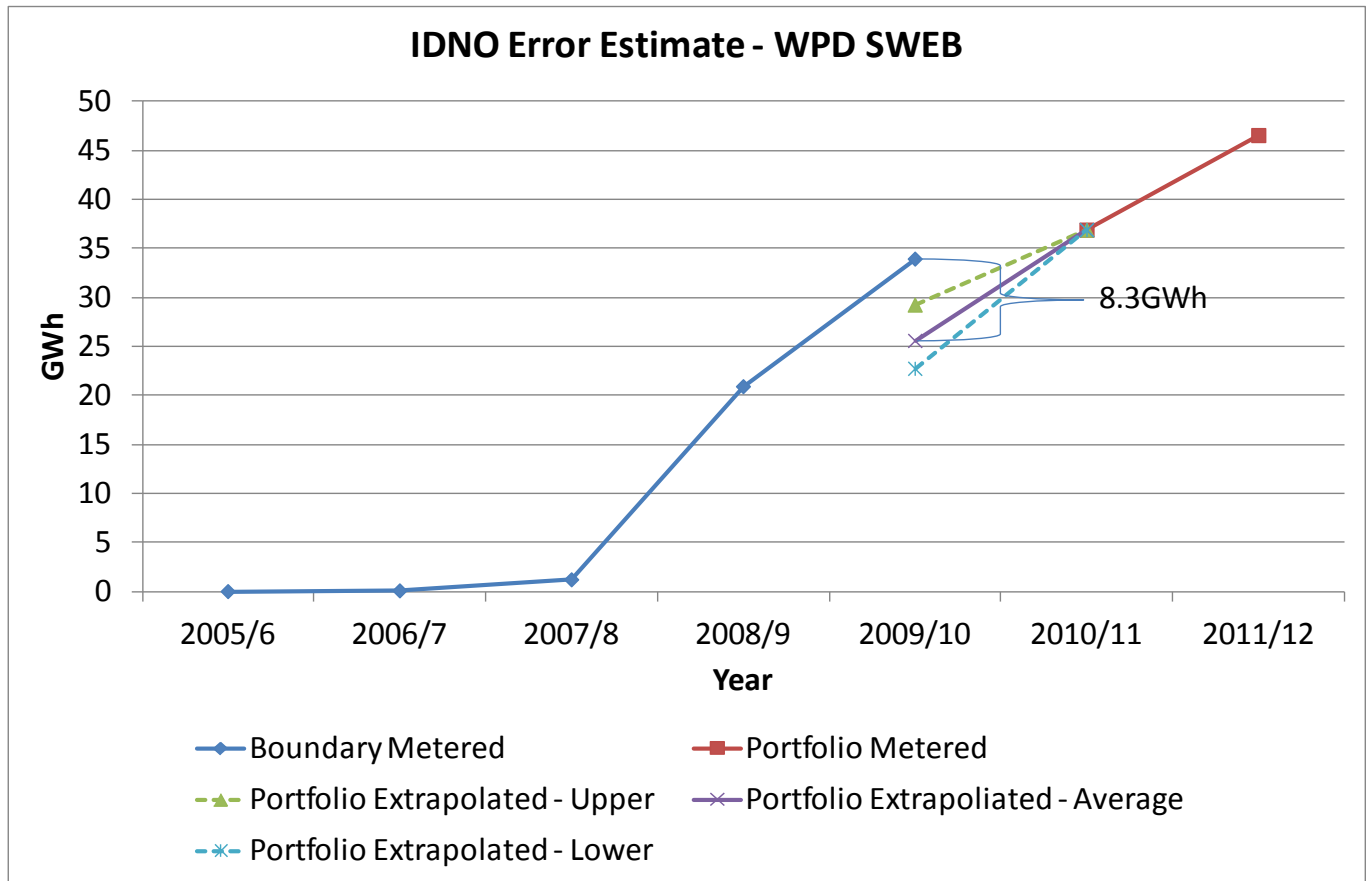
Boundary metering was introduced in response to an Ofgem view that it was discriminatory for DNOs to impose the costs of Boundary meters on IDNOs; consistent with this direction, DNOs and IDNOs generally stopped paying for data to be collected from existing boundary meters from the start of DPCR5.

The graph below shows flows into the South West IDNOs based on boundary metering up to the end of DPCR4 (dark blue line), and then the equivalent portfolio metering from the start of DPCR5 (dark red line). It is clear that the portfolio metering is significantly lower than the boundary metering – which would have given an apparent increase in the losses on the South West network when looking at Settlement Data.

WPD have taken the observed portfolio metering for 2010/11 and extrapolate this back to 2009/10 using a range of estimates for the underlying growth in IDNO demand. The graph below shows the impact of three growth rates:

- That observed in boundary metering between 2008/9 and 2009/10;
- That observed in portfolio metering between 2010/11 and 2011/12; and
- The average of the above.

This gives a range of errors between settlement under-estimating consumption by between 4.7 GWh and 11.2GWh.



2.13.4 Data Provided Under Approach C for restatement

In providing data to Ofgem for restatement of prior losses performance, WPD have provided two sets of data:

- One based upon a fully reconciled set of billed data (effectively approach A); and
- One based upon billed data which was created using the fully reconciled set of data with subsequent reconciliations 'time-shifted' to move the units to when they would have been billed (provided by WPD as being under approach C).

In providing both sets of data, WPD have used fully reconciled HH data for both approaches above. Neither of these approaches aligns with the historic methodology reported under SLC47 which was as follows:

- For S Wales and S West, WPD left open the year end to include reconciliations in subsequent months up to June billing each year.
- For East and West Midlands, their methodology initially accounted for NHH units on a corrected basis i.e. after application of the GSP Group Correction Factor and used provisions to defer the recognition of differences between corrected and uncorrected NHH units. These provisions were released after 4 and 3 years (E & W) respectively.

WPD have provided a full explanation to Ofgem and ESP on 12 March as to their rationale for providing data as outlined above, contrary to their historic methodology.

2.13.5 WPD South West Policy Issues

WPD have reduced their reported losses in respect of the South West network to account for "units found". These are units that have been identified through the WPD "Losses project", where it has identified MPANs within their networks that seem to be being metered in error (e.g. through applying the wrong scaling factor) and sought to have these corrected through the formal disputes under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. WPD have then estimated the corrections needed to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction.

The policy issue is whether this adjustment is allowed in the losses reporting methodology for this network. There are two factors to consider here:

- **WPD dispute whether it is allowed:** In discussions, WPD have acknowledged that such adjustments are not explicitly permitted by their method, but have equally noted that neither are they explicitly precluded;
- **Was part of practice for previous reports:** Adjustments of this type have, for the South West and South Wales, been incorporated in WPD's routine reporting of losses throughout DPCR4 (albeit focused on inventory for un-metered supplies). These were consistently part of its practice in applying its losses reporting methodology. In addition to this, WPD found a further 1.1GWh for 2010 using a different process to that routinely applied during DPCR4. As this 0.01GWh was found using a different process, it is debatable whether it is consistent with their reporting practiceduring DPCR4, specifically:
- During DPCR4, WPD were "finding" units by checking the inventories for unmetered supplies (with those units then entered as a manual adjustment to the losses calculation); and
 - Post DPCR4, WPD initiated a "Losses Project" to identify MPANs with the wrong current transformer (CT) ratio (which leads to the "raw" meter value being scaled incorrectly for use in Settlement).

2.13.6 WPD South West – Errors

The reconciliation of the losses data for WPD South Wales has not identified any errors in the data as submitted by the DNO.

2.14 Western Power Distribution (WPD) - West Midlands

Western Power Distribution operates four distribution licenses covering the South West and Midlands of England and the South of Wales. These cover the licensed areas that were operated by SWEB, MEB, EMEB and SWALEC when the industry was privatised. The following paragraphs discuss the reconciliation of the legacy MEB network.

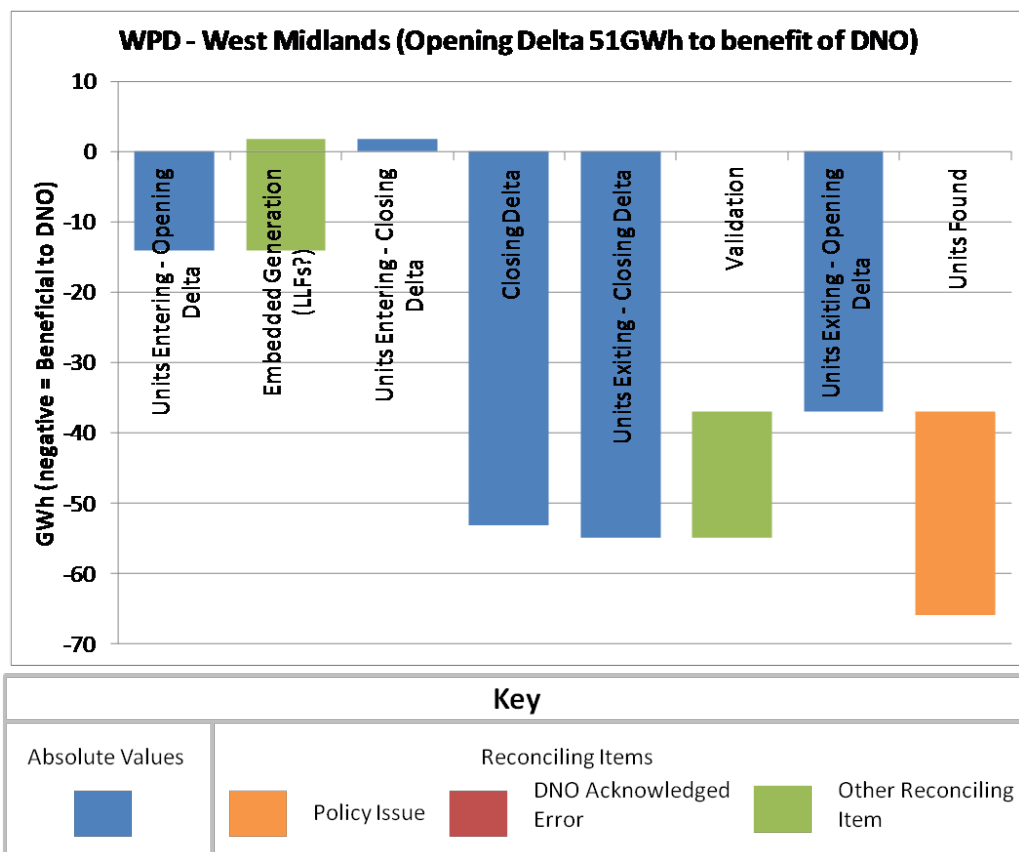
At the start of this process, there was an un-reconciled difference of 51GWh between the losses apparent from 2009/10 data submitted by WPD and the apparent losses derived from Settlement data, with this difference being made up as follows:

- **Units Entering WPD’s West Midlands network:** WPD data showed 14 GWh less energy entering its Northern network than the Settlement data; and
- **Units Exiting WPD’s West Midlands Networks:** WPD data showed 37GWh more energy exiting its network than the Settlement data.

Further investigation has increased this un-reconciled difference to 53GWh; however:

- This remaining difference can potentially largely be explained by errors in the Settlement metering of consumption within IDNO networks; and
- It should be noted that the opening delta already incorporated an adjustment for 29GWh, where it is debatable whether this adjustment was consistent with the relevant losses reporting methodology. This adjustment is in respect of energy where WPD found that meters had been recording inaccurately into Settlement, and had then estimated the historic effect of these metering errors.

The reconciling items are illustrated below, and discussed further in the following paragraphs.



2.14.1 Units Entering Reconciling Items

- **Embedded Generation (16GWh):** WPD have compare the embedded generation half-hourly metered data in Settlements with that in their billing system and found a difference of 16GWh. Of this, they can demonstrate that 10.4GWh is metered generation that shows in Settlement on de-energised MPANs.

2.14.2 Units Exiting Reconciling Items

- **Validation (18GWh):** WPD have compared the units showing in settlement with those they actually billed, and highlight a difference of 18GWh. They have not been able to explain why this data is different, and assume that it due to differences in the validation of meter data in their systems and Settlement. It is, however, notable that:
 - The direction of the error suggests that WPD billed users (for DUoS) less than it could have done;
 - DNOs' had an incentive (through the growth term) in DPCR4 to maximise their billings;
 - The DNO's billing data has been accepted by the relevant customers.
- **Units Found (29GWh):** WPD had previous explained to Ofgem that its data needed a 29GWh adjustment to reflect the effect of its "Losses Project". Without this reconciling item, the Units Exiting opening delta would have been 66GWh, and the total opening delta 80GWh – in both cases in the DNO's favour.

Under the WPD "Losses project", it has identified MPANs within their networks that seem to be being metered in error (e.g. through applying the wrong scaling factor) and sought to have these corrected through the formal disputes under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. WPD have then estimated the corrections needed to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction.

2.14.3 Outstanding Delta and IDNO Metering Estimate

The reconciliation thus far for the WPD West Midlands Network has an unreconciled difference of 53GWh in favour of the DNO. As illustrated below, investigation of portfolio metering for the IDNOs embedded within the West Midlands Network suggest that errors for this metering could easily account for this remaining reconciling item.

There are legitimate differences between the losses apparent from Settlement Data and that reported by the DNO based on what each assumes about the flow of energy into IDNO networks:

- During DPCR4, WPD measures the flows into each IDNO based on metered flows at the boundary between the relevant WPD and IDNO networks.
- Settlement data measures the amount of energy consumed by customers on the IDNO network, and makes no adjustment for the losses between the boundary meters and those customers.

An error in the "apparent" losses from pure Settlement data can then occur because either:

- Some of the Settlement losses apparent for the relevant DNO actually occurred on an IDNO's network; and
- There may be errors in recording or estimating the demand of customers on the IDNO's network.

Unfortunately, we are not able to compare the boundary meters with the total assumed consumption of IDNO connected customers on an entirely consistent basis, as the data for both is not readily accessible for the same time period:

- During DPCR4 WPD (as with most other DNOs) billed IDNOs for DUoS based on boundary meters. The IDNO customers were metered and handled through the relevant (SVA or CVA) settlement process; however, the total consumption of each IDNO's customers was never determined as a separate total.
- From the start of DPCR5, IDNOs have been billed for DUoS based on portfolio metering – which is a summation of the Settlement metered values for IDNO connected customers.

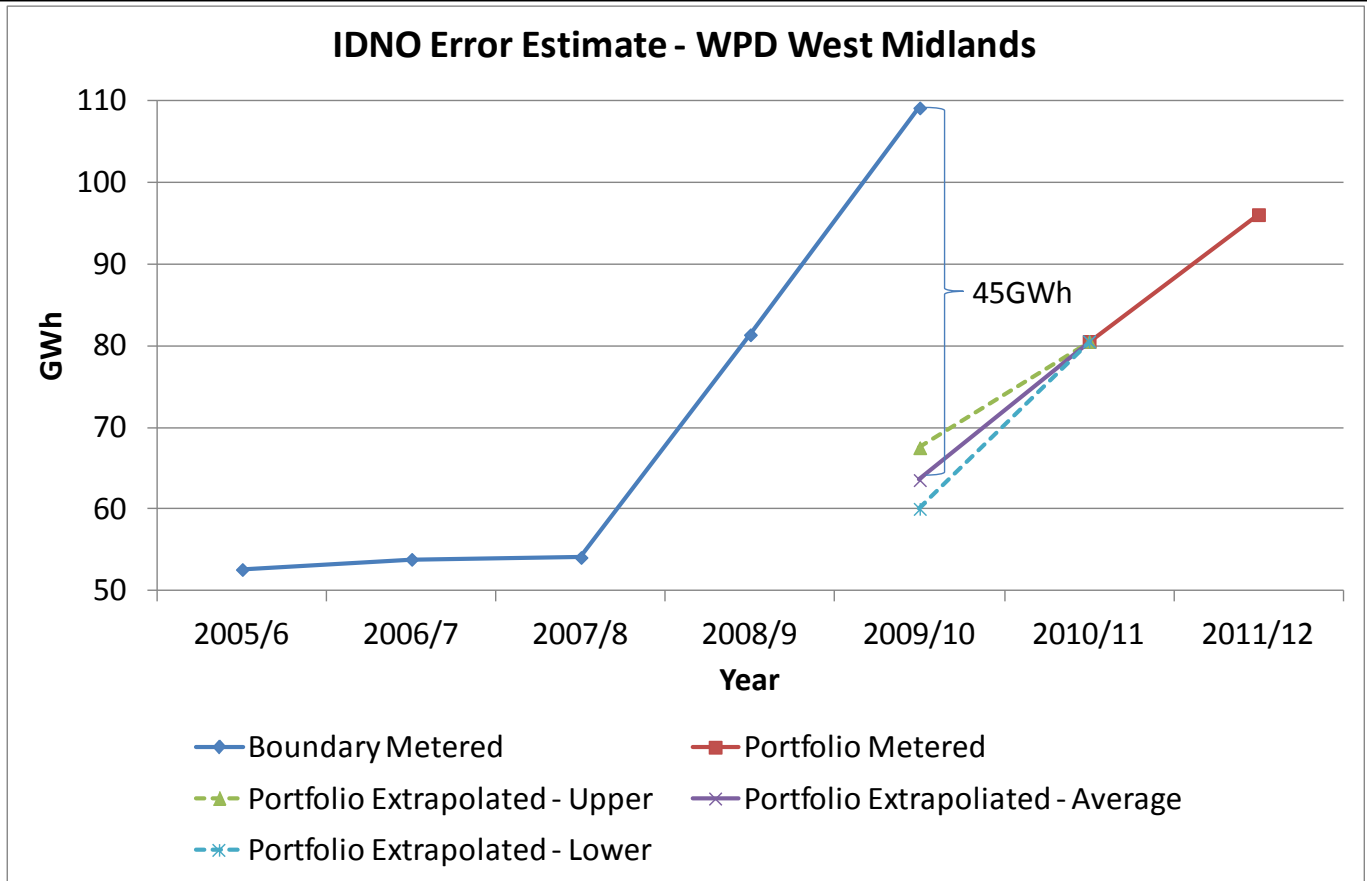
Boundary metering was introduced in response to an Ofgem view that it was discriminatory for DNOs to impose the costs of Boundary meters on IDNOs; consistent with this direction, DNOs and IDNOs generally stopped paying for data to be collected from existing boundary meters from the start of DPCR5.

The graph below shows flows into the West Midland IDNOs based on boundary metering up to the end of DPCR4 (dark blue line), and then the equivalent portfolio metering from the start of DPCR5 (dark red line). It is clear that the portfolio metering is significantly lower than the boundary metering – which would have given an apparent increase in the losses on the West Midlands network when looking at Settlement Data.

IWPD have taken the observed portfolio metering for 2010/11 and extrapolate this back to 2009/10 using a range of estimates for the underlying growth in IDNO demand. The graph below shows the impact of three growth rates:

- That observed in boundary metering between 2008/9 and 2009/10;
- That observed in portfolio metering between 20010/11 and 2011/12; and
- The average of the above.

This gives a range of errors between 49GWh and 41GWh. Given the uncertainty over this data, it is entirely plausible that this error could fully explain the 53GWh un-reconciled difference.



2.14.4 Data Provided Under Approach C for restatement

In providing data to Ofgem for restatement of prior losses performance, WPD have provided two sets of data:

- One based upon a fully reconciled set of billed data (effectively approach A); and
- One based upon billed data which was created using the fully reconciled set of data with subsequent reconciliations ‘time-shifted’ to move the units to when they would have been billed (provided by WPD as being under approach C).

In providing both sets of data, WPD have used fully reconciled HH data for both approaches above. Neither of these approaches aligns with the historic methodology reported under SLC47 which was as follows:

- For S Wales and S West, WPD left open the year end to include reconciliations in subsequent months up to June billing each year.
- For East and West Midlands, their methodology initially accounted for NHH units on a corrected basis i.e. after application of the GSP Group Correction Factor and used provisions to defer the recognition of differences between corrected and uncorrected NHH units. These provisions were released after 4 years (East Midlands) and 3 years (West Midlands) respectively.

WPD have provided a full explanation to Ofgem and ESP on 12th March as to their rationale for providing data as outlined above, contrary to their historic methodology.

2.14.5 WPD West Midlands Policy Issues

WPD have reduced their reported losses in respect of the West Midlands network to account for “units found”. These are units that have been identified through the WPD “Losses project”, where it has identified MPANs within their networks that seem to be being metered in error (e.g. through applying the wrong scaling factor) and sought to have these corrected through the formal disputes under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. WPD have then estimated the corrections needed to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction.

The policy issue is whether this adjustment is allowed in the losses reporting methodology for this network. There are two factors to consider here:

- **WPD Dispute whether it is allowed:** In discussions, WPD have acknowledged that such adjustments are not explicitly permitted by their method, but have equally noted that neither are they explicitly precluded;
- **Agreed change in reporting practice:** WPD have acknowledged that the inclusion of these adjustments is a change in the practice and application of the losses reporting methodology for the West Midlands from that which applied in previous years.

2.14.6 WPD West Midlands – Errors

The reconciliation of the losses data for WPD West Midlands has not identified any errors in the data as submitted by the DNO.

Appendix A: UK Power Networks – Units Found.

Introduction

UK Power Networks' strategy to manage losses during the DPCR5 period included active pursuit of errors in metered consumption data within its networks. Where they have found errors, they have sought to have these corrected through disputes with the relevant Supplier or Data Collector. These have most often been resolved through bilateral disputes, without the need for recourse to a full dispute under the Balancing and Settlement Code.

These disputes have typically corrected data from a given point forward. UKPN have then estimated the corrections needed to data for the period whilst the meter was being recorded inaccurately in Settlement, and for which the relevant Dispute did not make a correction. These retrospective adjustments for 2009/10 collectively represent 413.5GWh across the three UK Power Networks licensees as follows:

- EPN – 85.5GWh
- LPN – 118GWh
- SPN – 109GWh

The following paragraphs discuss:

- How these adjustments are enabled through the UK Power Networks' DPCR4 losses reporting methodology; and
- The evidence we have seen to support UK Power Networks' estimation of the quantity of energy delivered but not metered for specific cases.

UK Power Networks Methodology

The units found are mentioned in the methodology for the three UK Power Networks' licensees as "Units Distributed not Accounted For In Settlements" (see below).



Appendix A

EDF Energy Networks Regulatory Loss Calculation April 1st to March 31st

Adjusted System Entry Volume

+	CVA Units Entering The Network	GSP DSC BMU
+/-	Prior Period Adjustment	
+	Units Entering The Network From SVA Registered DG	
+/-	Prior Period Adjustment	
=	Total Adjusted System Entry Volume	

Adjusted Units Distributed

+	SVA Deemed Non Half Hourly Units Distributed	
+/-	Prior period accounting adjustments	
+	SVA Deemed Half Hourly Units Distributed	
+/-	Prior period accounting adjustments	
+	Units Distributed Not Accounted For In Settlement	
+/-	Prior period accounting adjustments	
+	CVA Units Leaving Network	GSP DSCP BMU
+/-	Prior Period Adjustments	
+/-	Provision Movement	
=	Total Units Distributed	
+/-	Metered Units Distributed pre Apr 2005	
=	Total Adjusted Units Distributed (AUD)	

$$\text{Adjusted Distribution Loss} = \text{SEV} - \text{AUD} = (\text{L})$$

$$\text{Benchmark Loss (AL)} = \text{AUD} \times \text{ALP}^1 \%$$

¹ ALP from Special Condition C1 of Distribution License

This is then defined further as follows:

“Units Distributed not Processed Via Settlement

There are some situations where units are distributed that are not processed via Settlement. The most common occurrence is where EDF Energy Networks distributes to

an IDNO. Such connections are issued with a “13 digit non-settlement identifier” and are generally metered at the boundary. The data from the boundary meters is collected and entered into EDF Energy Networks’ billing processes in the same way as settlement data and, through this, is recognised in the financial accounts and records of units distributed. Where data is not available estimates are made, subject to revision when data becomes available.

There is an ongoing industry debate, involving Ofgem, concerning the final arrangements for the recognition and billing of units distributed by DNOs to IDNOs. In light of the outcome of this debate, EDF Energy Networks may need to revise its approach. A second area is where electricity is taken from the network illegally, as defined under Schedule 6 of the Electricity Act. In conjunction with suppliers, we are currently bringing prosecutions against a number of individuals, the final outcome of which are awaited. It is not likely to be possible to enter the relevant units distributed into settlement at the present time, in which case they will be entered directly into our financial accounts and records of units distributed.

*A third area is where units distributed need to be recognised outside of the settlement time frames. This may arise due to **disputes** or where an unmetered supply customer provides a retrospective inventory.”*

The approach taken by UK Power Networks is linked to the third paragraph of the above paragraphs. Some have claimed that “disputes” above implies a full Dispute under the Balancing and Settlement Code, whilst UK Power Networks take this term to also include bilateral disputes – e.g. with the relevant data collector. As ESP Consulting, we are not qualified to give legal advice on the meaning of “disputes” in this context, but note that:

- The term “dispute” is not capitalised – suggesting there was not an intent to explicitly link this to a defined dispute process in the Balancing and Settlement Code or any other contract; and
- That there is nothing elsewhere in the UK Power Networks methodology that implies this is a Balancing and Settlement Code Dispute.

This practice has clearly been part of the methodology for the UK Power Networks licensees through DPCR4 – as evidenced by the numbers below.

Summary Of Variances

Variance	EPN					LPN					SPN				
	2005-06 GWh	2006-07 GWh	2007-08 GWh	2008-09 GWh	2009-10 GWh	2005-06 GWh	2006-07 GWh	2007-08 GWh	2008-09 GWh	2009-10 GWh	2005-06 GWh	2006-07 GWh	2007-08 GWh	2008-09 GWh	2009-10 GWh
	-18	-50	-26	-29	-85	-61	-60	-60	41	-153	-92	-27	90	-68	-147
Explanation															
Acton Lane Units Entering										46					
Difference in SVA HH export data					-10					-16					-7
Consolidation Error												102			
Acton Lane SVA Units Distributed										-46					
Duplication in HH data						-25	-3	-41	-25	-28	-57				-22
Units Distributed Not Accounted For In Settlement	-29	-46	-21	-35	-86	-29	-129	-41	-4	-118	-21	-27	-11	-67	-109
Losses on IDNO @ 5%	0	0	0	-2	-3		-1	-4	-4	-4				0	-1
Still to be explained	11	-3	-5	8	13	-8	73	26	74	14	-14	0	0	0	-8

Positive variance = DNO's reported GWh losses are higher than those implied by the Ofgem Data.
Negative variance = DNO's reported GWh losses are lower than those implied by the Ofgem Data.

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Evidence to support

The “Units Found” items for UK Power Networks represent its estimate of the historic error in meter data for MPANs where they have agreed a correction going forward with the relevant Data Collector or Supplier. Given the significant size of these “Units Found”, we have sought evidence that these estimates are reasonable.

We have been provided the detailed adjustments for ten specific cases which collectively represent adjustments of 66.3GWh. Eight of these cases are for metered sites, and two cases relate to unmetered (e.g. street lighting) supplies.

For each of the metered cases, we have been provided with a spreadsheet providing the estimate and (for metered units) a note summarising the investigation. The adjustments tend to fall into the following categories:

- **Missing Meters:** There are a number of cases where energy was being consumed across a meter, but that meter was not showing in Settlement (either the MPAN had been removed, or the meter was not being read and estimates of zero were provided). In these cases, the missing take has been estimated based on the “average” consumption across the relevant meter for the period before and after it was omitted from Settlement.
- **Meter Out of Calibration:** There are cases where the meter values have shown a step change – that has later been found due to a fault with that meter. The error in this case has been estimated in a similar manner to that for missing meters above. That is:
 - The “average” consumption is determined across the periods before and after the meter was in error; and
 - An adjustment is made to bring the consumption billed on the “erroneous” meter data up to the “average” consumption.
- **Incorrect CT Ratios:** There are a number of cases where meters values have been scaled incorrectly – due to an incorrect specification of the CTⁱ ratios in Settlement. In this case, the error is estimated based on a scaling of the historic billed values.
- **Missing Phase:** There is a case of a site with a three-phase supply, but where only two of those phases were being metered. Once the meter error was corrected, UK Power Networks observed the increase in daily consumption – and used this to estimate the units that had not been metered.

Both of the un-metered cases provided to us show the effect of audits by the relevant street lighting authority revealing that their inventories were incorrect such that either:

- Some assets were not recorded; or
- The power consumption of specific assets was too low (e.g. the bulbs had been upgraded to ones with a higher power rating).

In each case, UK Power Networks have estimated the shortfall by projecting the increased consumption back to the date of the last known inventory audit.

ⁱ Current Transformer