

Combined CDCM and EDCM Method M model r7118

Tuesday 16 February 2016

1. This document describes a Method M model produced for the DCP 234 working group.
2. This model is not similar to any model previously published by the DCUSA Panel (hereinafter referred to as a legacy Method M workbook). The new Method M model uses a structure and layout similar to a CDCM tariff model, with a single sheet dedicated to input data, and a linear structure for calculations.
3. The new model covers both the CDCM and EDCM versions of Method M in a single workbook.
4. For the purpose of this document, the acronym DNO refers to an old regional distribution company, and the acronym LDNO refers to an embedded network operator (e.g. IDNO).

Input data

5. The numbers associated with input data tables are fixed. They will only change insofar as there are substantial changes to the structure of the input data required by Method M.
6. Each input data table has a short commentary between its title and the data area indicating how to populate it. These commentaries are written on the basis that a legacy version of the Method M model will be used to store the input data, and, in a few cases, to perform some pre-processing of the raw data.
7. In some instances, the commentary includes cell references. These cell references, when present, are purely indicative. Cell references should never be blindly followed, as there appear to be several versions of many of the relevant tables in existence, with the relevant data in different places. It is essential to check, at every step of populating this model, that each data item picked from a RRP, FBPQ or legal Method M workbook matches the table title and row/column labels where it is being inserted.
8. Table 1 lists the input data tables.

Table 1 Combined Method M input data tables

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| 1300 | Company, charging year, data version This model identification information is repeated at the top of each sheet. |
| 1301 | DNO LV mains usage This figure represents the average proportion of LV mains length serving LDNO connections with an LV boundary that is provided by the DNO rather than the LDNO. |

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| 1302 | DNO HV mains usage This figure represents the average proportion of HV mains length serving LDNO connections with an HV boundary that is provided by the DNO rather than the LDNO. |
| 1310 | DPCR4 aggregate allowances (£) These figures are in £ for five-year aggregates (2005–2010) of a recast version of an Ofgem price control determination finalised in early 2005. In order to perform the necessary recasting of the data, use a legacy Method M workbook. |
| 1315 | Analysis of allowed revenue for 2007/2008 (£/year) These data are extracted from a table monitoring the application of the 2005–2010 price control to the year 2007/2008. |
| 1321 | Units distributed (GWh) These data are taken from the 2007/2008 regulatory reporting pack (table 5.1). |
| 1322 | Losses (GWh) These data are taken from the 2007/2008 regulatory reporting pack (table 5.1). |
| 1328 | DCP 117/DCP 231 additional annual income (£) These data are derived from FBPQ tables, as one tenth of a 10-year aggregate. The result can be taken from a legacy Method M workbook. |
| 1329 | Net new connections and reinforcement costs (£) These data are derived from a combination of the 2007/2008 regulatory reporting pack (table 2.4) and 10-year averages from the FBPQ. The result can be taken from a legacy Method M workbook. |
| 1330 | Allocated costs (£/year) These data are taken from the 2007/2008 regulatory reporting pack (tables 2.3 and 2.4). |
| 1331 | Assets in CDCM model (£) These data are taken from the CDCM tariff model (Otex sheet). They are also used as input data in the EDCM tariff model. |
| 1332 | All notional assets in EDCM (£) These data are taken from the EDCM tariff model. |
| 1335 | Total costs (£/year) These data are taken from the 2007/2008 regulatory reporting pack (table 1.3). |
| 1355 | MEAV data These figures are probably mostly drawn from a version of the FBPQ for the 2009 price control review. A legacy Method M workbook might be useful to perform the necessary compilation of the data. |

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| 1369 | Net capex analysis pre-DCP 118 (£) These figures are probably mostly drawn from a version of the FBPQ for the 2009 price control review. A legacy Method M workbook might be useful to perform the necessary compilation of the data. |
| 1380 | Net capex: ratio of LV services to LV total These figures are probably mostly drawn from a version of the FBPQ for the 2009 price control review (sheet NL1 only). |

Calculation tables

9. The numbers associated with input data tables are not fixed: future versions of the model might have a different arrangement of tables and/or different table numbers.
10. The calculation tables are on two sheets, labelled “CDCM” and “EDCM”. The EDCM sheet only contains calculations that are specific to the EDCM, and refers to intermediate results from the CDCM sheet. Where a substantial calculation is used in both the CDCM and EDCM, that calculation appears on the CDCM sheet and the results are used on the EDCM sheet.
11. Table 2 lists the calculation tables used for the calculation of LDNO discounts to be used in the CDCM.

Table 2 Calculation tables for CDCM Method M

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| 1401 | Allocated costs after DCP 117 adjustments This table collects expenditure data from input data tables 1329 and 1330. |
| 1402 | Expenditure data This table collects and aggregates expenditure data from tables 1335 and 1401. |
| 1403 | Allocation rules This table contains constants used as part of the cost allocation rules. |
| 1404 | MEAV calculations This table calculates MEAV for each asset category. It also contains constant data mapping asset categories to network levels. |
| 1405 | MEAV by network level (£) This table calculates MEAV for each network level by aggregating data from table 1404. |
| 1406 | MEAV percentages This table calculates the proportion of the MEAV at each network level (before the application of DCP 118). |

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| 1407 | EHV asset levels This is a constant table identifying the network levels in table 1331 which are treated as EHV for the purposes of DCP 118. |
| 1408 | Proportion of EHV notional assets which are in the CDCM This is the main ratio used for DCP 118 adjustments. |
| 1409 | Proportion to be kept For each network level, this shows the proportion of costs which are to be taken into account within Method M. |
| 1410 | MEAV percentages after DCP 118 exclusions This calculates MEAV percentages adjusted for DCP 118. |
| 1411 | EHV only This is a constant table capturing an allocation rule that allocates all costs to the EHV&132 network level. |
| 1412 | LV only This is a constant table capturing an allocation rule that allocates all costs to the LV network level. |
| 1413 | All allocation percentages This uses the rules recorded in table 1403 and the allocation percentages in tables 1410–1412 to determine the allocation percentages applicable to each cost category. |
| 1414 | Complete allocation This combines pre-allocated costs with an allocation of the residual using the percentages in table 1413. |
| 1415–1420 | Complete allocation: LV total share; MEAV: ratio of LV services to LV total; Allocation of LV to LV services; Allocation to LV services; Allocation to LV mains; Complete allocation split between LV mains and services These tables adjust the allocation of costs to separate LV mains and LV services (DCP 095). |
| 1421 | Complete allocation, adjusted for regulatory capitalisation This allocation of costs to network levels excludes a proportion of costs which is deemed to be capitalised for regulatory purposes. |
| 1422 | Total expensed for each level This aggregates the data in table 1421, separately for each network level. |
| 1423 | Expensed proportions This uses the data in table 1422 to calculate the proportion of expensed costs arising at each network level. |

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| 1424 | Net capex percentages This table uses the data from table 1369 to calculate the proportion of net capex arising at each network level. |
| 1425 | Net capex percentages after DCP 118 exclusions This adjusts the net capex percentages for the effect of DCP 118. |
| 1426–1429 | Net capex: LV total share ; Allocation to LV services; Allocation to LV mains; Net capex allocation split between LV mains and services These tables adjust the net capex percentages to separate LV mains and LV services (DCP 095). |
| 1430 | Proportion of price control revenue attributed to opex This calculates the proportion of table 1310 allowed revenue which is opex (the rest, being depreciation or return on capital, is treated as net capex within Method M). |
| 1431 | To be deducted from revenue and treated as "upstream" cost This extracts the expenses such as transmission exit charges which are excluded from the normal method of allocation within Method M and instead treated as “upstream” costs. |
| 1432 | Revenue to be allocated between network levels (£/year) This identifies the revenue to be split within Method M. The revenue to be split excludes incentive revenue identified in table 1315 and amounts treated as “upstream” costs from table 1431. |
| 1433 | Adjustment factors to LV (kWh/GWh) These factors implement the method specified in the Method M methodology to allocate losses between network levels. |
| 1434 | Units flowing, loss adjusted to LV (kWh) This is an estimate of units flowing through each network level, adjusted so as to be equivalent to a number of units delivered to LV. |
| 1435–1438 | Units at LV; Allocation to LV services; Allocation to LV mains; Units These tables reformat the units flowing table to separate LV mains and LV services (DCP 095). |
| 1439 | p/kWh split (DCP 117 modified) This allocates the revenue to be allocated between network levels, using both the expensed costs percentages and the net capex percentages, and expresses the result as a unit cost over the number of units flowing through each network level. |
| 1440 | p/kWh not split This expresses the revenue excluded from Method M allocation as a unit cost over the number of units flowing through the network. |

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| 1441 | Allocated proportion This uses data from tables 1439 and 1440 to calculate the proportion of total costs allocated to each network level, adjusted for the amount of power flowing through each network level. |
| 1442 | Allocations to network levels This extracts the data from table 1441 that relate to the network levels that are relevant to the calculation of CDCM discount factors. |
| 1443 | Complete allocation, zeroing out negative numbers This copies the data from the table 1414 allocation of RRP cost categories, but zeroing out any negative numbers. |
| 1444 | Direct costs This aggregates the costs classified as direct costs (according to table 1402) within table 1443. |
| 1445 | Total costs This aggregates all the costs within table 1443. |
| 1446 | Direct cost proportion This calculates the proportion of table 1443 costs which are direct costs. |
| 1447 | Direct cost proportions This extracts the data from table 1446 that relate to the network levels that are relevant to the calculation of CDCM discount factors. |

12. Table 3 lists the additional calculation tables used for the calculation of LDNO discounts to be used in the EDCM.

Table 3 Additional calculation tables for EDCM Method M

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| 1501 | All allocation percentages This uses the rules recorded in table 1403 and the allocation percentages in tables 1406, 1411 and 1412 to determine the allocation percentages applicable to each cost category. This is different from the corresponding CDCM table because EDCM Method M does not include anything similar to DCP 118. |
| 1502 | Complete allocation This combines pre-allocated costs with an allocation of the residual using the percentages in table 1501. |
| 1503 | Complete allocation, zeroing out negative numbers This copies the data from the table 1503 allocation of RRP cost categories, but zeroing out any negative numbers. |

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| 1504 | Direct costs This aggregates the costs classified as direct costs (according to table 1402) within table 1503. |
| 1505 | Total costs This aggregates all the costs within table 1503. |
| 1506 | Direct cost proportion This calculates the proportion of table 1503 costs which are direct costs. |
| 1507 | Splitting factors This calculates the proportion of costs at a boundary asset level which are attributed to the LDNO. The requirement in the methodology that the EHV and 132kV “splits” are set to 100 per cent is captured within the formula used for the EHV and 132kV network levels. |
| 1508 | Splitting factor 132kV This extracts the 132kV splitting factor. |
| 1509 | Splitting factor EHV This extracts the EHV splitting factor. |
| 1510 | Network levels not covered by DNO network This combines assumptions about the network levels associated with the different boundary levels with the splitting factors in order to create a matrix of the proportion of the costs at each network level which are not DNO costs for each LDNO boundary and end user configuration. |
| 1511 | MEAV calculations This table contains MEAV for each asset category and constant data mapping asset categories to EHV network levels. |
| 1512 | MEAV by network level (£) This table calculates MEAV for each EHV network level. |
| 1513 | MEAV percentages This table calculates the proportion of the MEAV at each EHV network level. |
| 1514 | Complete allocation, adjusted for regulatory capitalisation This allocation of costs to network levels, based on data from table 1502, excludes a proportion of costs which is deemed to be capitalised for regulatory purposes. |
| 1515 | Total expensed for each level This aggregates the data in table 1514 across all network levels. |

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| 1516 | Expensed proportions This uses tables 1514 and 1515 to calculate the proportion of expensed costs arising at each network level. |
| 1517 | p/kWh split (DCP 117 modified) This allocates the revenue to be allocated between network levels, using both the expensed costs percentages and the net capex percentages, and expresses the result as a unit cost over the number of units flowing through each network level. |
| 1518 | p/kWh not split This expresses the revenue excluded from Method M allocation as a unit cost over the number of units flowing through the network. |
| 1519 | Allocated proportion This uses data from tables 1517 and 1518 to calculate the proportion of total costs allocated to each network level, adjusted for the amount of power flowing through each network level. |
| 1520–1522 | Allocation to EHV network levels; Allocation between EHV network levels; Extended allocation These tables use the MEAV percentages from table 1513 to split the EHV&132 allocation in table 1519 into separate allocations for each EHV network level. |
| 1523 | Proportion of costs not covered by DNO network This combines data from tables 1510 and 1522 to determine the proportion of a notional LV p/kWh that is not covered by the DNO's network, for each LDNO boundary and end user configuration. |
| 1524 | Network levels not covered by all-the-way tariff This table of constants identifies the network level not used by the all-the-way tariff, for each LDNO boundary and end user configuration. |
| 1525 | Proportion of costs not covered by all-the-way tariff This combines data from tables 1522 and 1524 to determine the proportion of a notional LV p/kWh that is not covered by the all-the-way tariff, for each LDNO boundary and end user configuration. |
| 1526 | LDNO discounts (EDCM) This calculates the LDNO discount factor for each LDNO boundary and end user configuration. |

Results

13. The results are in two tables, one for the CDCM and the other for the EDCM.
14. The numbers associated with results tables are not fixed — future versions of the model might present the results differently, and/or have results tables in a different order and/or different table numbers for results.

15. Table 4 lists the results tables.

Table 4 Method M results tables (LDNO discounts)

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| 1601 | LDNO discounts (CDCM) These discounts for CDCM LDNO boundary and end user configurations are presented in a table suitable for copying as values into input data table 1037 of a CDCM tariff model. |
| 1602 | LDNO discounts (EDCM) These discounts for EDCM LDNO boundary and end user configurations are copied from table 1526, reordered to make a table suitable for copying as values into input data table 1181 of an EDCM tariff model. |

Changes to the implementation of DCP 117

16. The latest DCP 234 model includes some changes to the way DCP 117 is implemented compared to the r6939 Method M model from 2015. These changes represent a more coherent way of implementing the calculations described by the DCP 117 working group from 2014.

17. Table 5 lists the differences in the details of the implementation of DCP 117 between the r6939 CDCM Method M model from 2015 and the latest DCP 234 model.

Table 5 Proposed changes to the implementation of DCP 117

| Proposed implementation | Implementation in r6939 model and summary of impact |
|--|--|
| DCP117/DCP231 additional annual income is allocated across all network levels in the same proportion as operating expenditure. | DCP117/DCP231 additional annual income is allocated between EHV, HV, HV/LV and LV in the same proportion as operating expenditure, and then the LV part is allocated between LV mains and LV services in the same proportion as the weighted average that would have been calculated if DCP117/DCP231 additional annual income had been zero. The difference only affects the LDNO LV:LV user discount. The impact on discounts is less than 0.1 per cent. |
| The allocation of revenue between EHV revenue and non-EHV revenue is applied in the same way for allowed revenue and DCP117/DCP231 additional annual income. This means that the EHV revenue proportion affects all allocations equally and therefore does not affect the discounts. | Total revenue less EHV revenue is allocated to network levels, and then an allocation of DCP117/DCP231 additional annual income that have not been scaled down by reference to any EHV revenue is added to that figure. This difference only affects CDCM discount factors because the EDCM methodology (after DCP 231) does not include DCP 118 or anything similar that would take account of EHV revenue. The impact on discounts is less than 0.1 per cent except in the UKPN areas (particularly UKPN EPN) where a exceptionally high proportion of revenue is said to be EHV revenue (see DNO data issues in table 6). |

Data issues in DNOs' Method M models for 2016/2017

18. We have identified some inconsistencies or possible errors in input data used in the Method M models for 2016/2017. Table 6 provides examples of these.

Table 6 Examples of DNO data issues in Method M models for 2016/2017

| Model | Examples of issues |
|---------------|---|
| ENWL | No 2016/2017 Method M model found on the company's website. In the 2015/2016 model, there were 1,010 pieces of other 132kV switchgear worth over £1.1 million each (over £1 billion of EHV MEAV). |
| NPG Northeast | There are 9,943km of paper-insulated LV mains and 2,216km of consac LV mains which are given a zero MEAV. |
| NPG Yorkshire | Most of the input data appear to relate to NPG Northeast. |
| SPEN SPD | No recent Method M model found on the company's website. The LV: LV discount could only be reproduced with an exceptionally low LV split. |
| SPEN SPM | No recent Method M model found on the company's website. The LV: LV discount could only be reproduced with an exceptionally low LV split. There appear to be many 132kV towers (2,176) but no 132kV tower line. |
| UKPN EPN | 2007/2008 EHV revenue is manifestly wrong (the figure in cell J61 on Summary of revenue might relate to a different DNO area). This was also the case in 2015 but it did not affect the discounts then. 2007/2008 revenue and incentive allowances have changed compared to 2015 models. 2007/2008 revenue is different in EDCM and CDCM Method M models. FBPQ LR6 is different in EDCM and CDCM models. The CDCM model is consistent with the 2015 models. |
| UKPN LPN | 2007/2008 EHV revenue is manifestly wrong (the figure in cell J61 on Summary of revenue might relate to a different DNO area). This was also the case in 2015 but it did not affect the discounts then. 2007/2008 revenue has changed compared to 2015 models. 2007/2008 revenue is different in EDCM and CDCM Method M models. Some data in the FBPQ LR6 sheet are different in different 2016 models, but these data do not appear to be used in calculations. |

| Model | Examples of issues |
|--------------|---|
| UKPN SPN | <p>2007/2008 EHV revenue seems a little high and should perhaps be checked.</p> <p>2007/2008 revenue and incentive allowances have changed compared to 2015 models.</p> <p>2007/2008 revenue is different in EDCM and CDCM Method M models.</p> <p>Some data in the FBPQ NL1 sheet are different in different 2016 models, but these data do not appear to be used in calculations.</p> |
| WPD EastM | <p>There appear to be 933km of 33kV tower line supported by only 1,287 33kV towers, which seems an exceptionally long average span.</p> <p>There appear to be 1,662 pieces of other 132kV switchgear worth over £1 million each (over £1.7 billion of EHV MEAV).</p> |
| WPD SWest | <p>There are 11,751 LV underground boards which are given a zero MEAV (they should probably be valued at tens of millions of pounds).</p> |
| WPD WestM | <p>There appear to be many 33kV towers (725) but no 33kV tower line.</p> <p>There appear to be 1,704 pieces of other 132kV switchgear worth over £1 million each, and 575 pieces of other 66kV switchgear worth £698,000 each (over £2 billion of EHV MEAV).</p> |