



# Profiling & Settlement Review

## Profiling and Settlement Review: Cost Benefit Analysis

### Executive Summary

ELEXON is currently reviewing the profiling and settlement arrangements for suppliers of domestic and commercial customers. This is for two reasons — Suppliers' now have an obligation to install Advanced meters for commercial customers; and the work underway on Smart metering for domestic and smaller commercial customers. These meters can record customers' energy usage on a half-hourly basis — where historically non-half-hourly meter advances were captured and settled using profiles.

We believe the time is right to consider how these changes affect Suppliers and the wholesale electricity market under the Balancing and Settlement Code (BSC). We also want to identify any improvements or opportunities for all parties, particularly relating to half-hourly settlement. This would ensure that the wholesale electricity market and the BSC facilitate the most efficient, effective and economic processes.

At the start of this review, we issued a consultation to help understand how Suppliers intend to settle customers in future. In particular, for their non-domestic customers (Profile Classes 5-8) who are having their meters replaced with Advanced meters. An excellent response was received with 32 organisations sending in their views. The main thread of the consultation responses was that there were a number of perceived barriers and issues to half-hourly settlement including costs to serve and half hourly Distribution charges.

Therefore, to quantify these barriers we performed a Cost Benefit Analysis (CBA) on mandated half-hourly settlement for all customers in Profile Classes 5-8 by 06 April 2014. This equates to approximately 164,000 customers and 18TWh of annual energy (10% of the non half hourly market's energy). Part of this CBA included gathering costs and impact information from Suppliers, their agents and Distribution Businesses and undertaking an impact assessment on the BSC arrangements.

The conclusions of the Cost Benefit Analysis study of mandating Half Hourly Settlement by 06 April 2014 are:

1. Central cost estimates and potential benefits over a 5 year period; costs: £35.1m and benefits: £85.0m;
2. There is support from most parties for half hourly settlement at some time in the future because of better risk management for Suppliers and potential less exposure to imbalance costs, more accurate demand forecasting, more cost effective tariffs with more accurate billing, settlement and DUoS charges and reduced carbon emissions from peak load shifting demand side reduction;
3. It is more efficient as HH settlement use the data that is recorded by the meter, instead of load profiling and non half hourly estimates;
4. The PSRG believe, based on the assumptions of the analysis, there is a clear cost benefit, but note that there are still significant costs at present for:
  - (a) Supplier agency costs for HH settled customers as industry mindset is still that half hourly equates to large customers;
  - (b) The current half hourly DUoS charging regime which dis-incentivises HH billing and settlement. These costs and benefits are based on the issue of HH DUoS charges having been resolved;



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5. HH settlement should be mandated for Profile Class 5-8 customers:
  - (a) By mandating HH settlement and increasing the HH market size significantly, supplier agency costs (costs to serve) will reduce further;
  - (b) It will help to identify issues for the settlement of smart meters as it can be seen as a trial for smart' and thereby through appropriate solutions make the smart 'meter-to-bank' process more efficient, effective and economic for 29m meters; and
  - (c) However, it is recognised that the issue of HH DUoS needs to be resolved. Work is underway under the Distribution Business Charging Methodology Forum to change the current HH DUoS charging methodology. The aim is that a more cost reflective charging methodology for HH customers will be in place by April 2012.



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# Profiling & Settlement Review

## 1 Introduction

This report assesses the costs and benefits of a mandatory move to Half Hourly settlement for all customers in Profile Classes 5 to 8 (i.e. larger non-domestic customers). The CBA was carried out by ELEXON and the Profiling and Settlement Review Group (PSRG), and forms an important element of the PSRG's work assessing the settlement and profiling implications of recent advances in metering.

In April 2009 the standard supply licence conditions were amended to require Suppliers to have installed Advanced meters for all non-domestic premises for customers in Profile Classes 5-8 by 6 April 2014. This requirement was further clarified by BSC Modification P230 'Enabling Interoperability through the use of CoP10 and CoP5 Metering', which addresses interoperability by requiring use of Advanced metering that complies with Code of Practice 10 (CoP10) at least. CoP10 is a half-hourly Metering Equipment standard, which means that all the Advanced meters installed to satisfy the licence obligation will be capable of recording, storing and remotely accessing half-hourly meter data. These meters are therefore capable of being settled as half-hourly under the BSC. However, there is currently no requirement to do so.

### April 2010 Consultation

ELEXON is reviewing the BSC profiling and settlement arrangements in light of these developments, and has established an expert group – the Profiling and Settlement Review Group (PSRG) – to assess the issues. In April 2010 the PSRG decided to consult with Suppliers and other interested parties to gain a better understanding of the factors that influence the choice of Half Hourly or Non Half Hourly settlement. The consultation document (see Attachment A or is available on the [ELEXON website](#)) was issued on 30 April 2010, with responses requested by 28 May 2010

We received 32 responses to our consultation, and were very pleased that responses came from across the industry - from small and large Suppliers, Supplier Agents (Meter Operators, Data Collectors, Data Aggregators), Distributors, consulting organisations, SVG members, Master Registration Agreement Executive Committee (MEC) and Consumer focus.

The main themes from the consultation responses were (see Attachment B for details on responses by question):

- Most Suppliers' responses identified that the main driver for the method of settlement (NHH or HH) was customer preference. This reflects the fact that choice of settlement method is currently not transparent to the customer (i.e. it affects the tariffs and contract terms that are available to the customer);

- Supplier Agent costs and DUoS charges were identified as key barriers to HH settlement;

- Most respondents said that addressing all the barriers identified (the cost to service a customer, including distribution (DUoS) and transmission (TNUoS) charges, HH meter cost, Supplier agent services, settlement and internal processes/systems impact) would encourage Suppliers to settle half hourly. The main issues highlighted were the differences in DUoS charges for HH/NHH and Supplier agent costs;

- Most respondents felt that the BSC should provide a cost-reflective and effective solution for Advanced and Smart meters. The market should decide and the BSC should not dis-incentivise HH settlement. However, some respondents believed that HH settlement should be mandated because it would benefit all parties;

- Most respondents supported a review of SVA Specified charges for HH Metering Systems in order to find the most appropriate and cost-effective approach. The current approach (of charging on a per kWh basis for NHH but a per MPAN basis for HH) was seen as a potential disincentive to HH settlement for lower-volume Metering Systems;

- The majority of respondents felt that the current DUoS charging arrangements discourages HH settlement;



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Most respondents believed that GSP Group Correction (GSPGCF) should be applied to all meters (HH and NHH) at some point; and

We received varied responses about when micro-generation would materially affect settlement. These ranged from now (for smaller suppliers) to 2015. Respondents said that the requirements were still unclear.

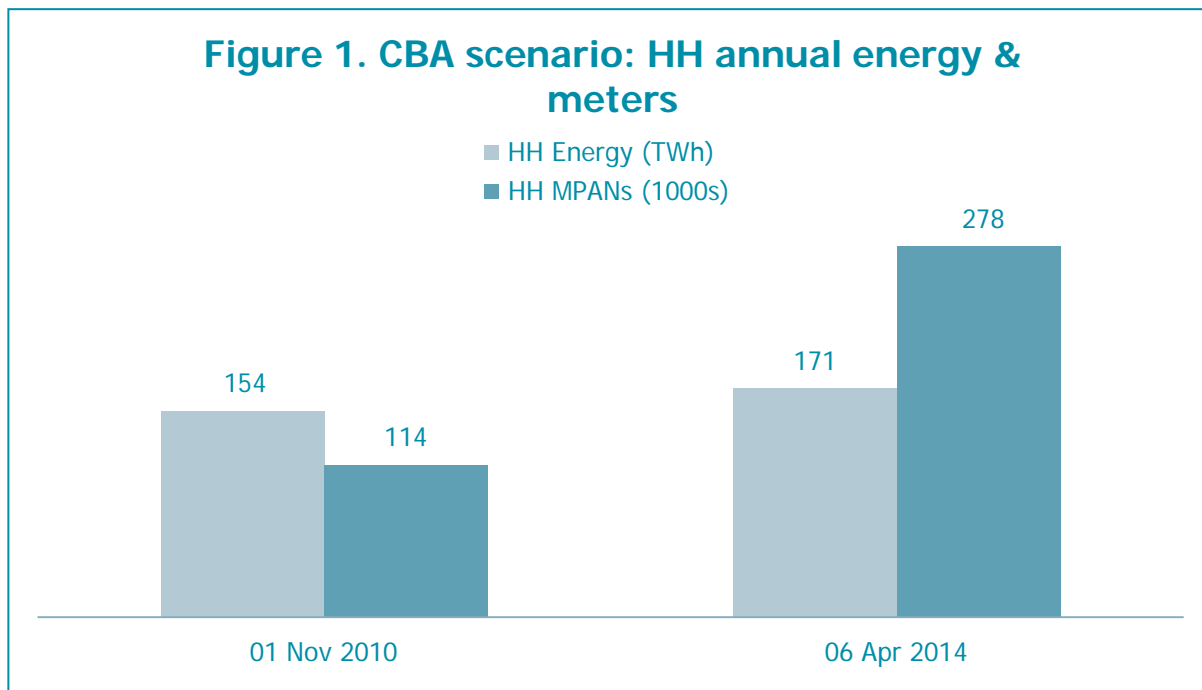
## Subsequent PSRG Discussions

The PSRG considered these responses and agreed that ELEXON undertake a Cost Benefit Analysis (CBA) to identify (and resolve) the issues, advantages/disadvantages, and costs/impacts of mandatory HH settlement for customers in Profile Classes 5-8.

For the purposes of the impact assessment the PSRG agreed a 'straw man' requirement, in which Half Hourly settlement is mandated for all customers in Profile Classes 5-8 by April 2014. See section 2.1 of this document for more details of the straw man requirement.

## 2 Overview of Cost Benefit Analysis

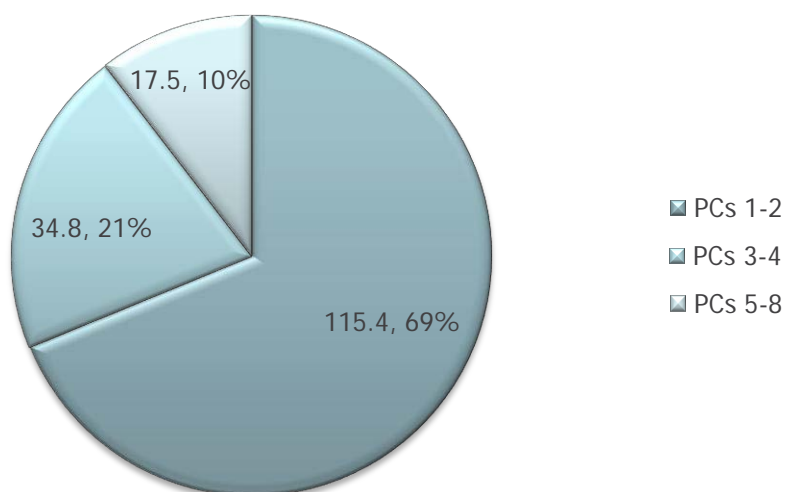
As discussed above the main thread of the consultation responses was that there were a number of perceived barriers and issues to half-hourly (HH) settlement including costs to serve and half hourly Distribution charges. Therefore, to quantify these barriers we performed a Cost Benefit Analysis (CBA) on mandated HH settlement for all customers in Profile Classes 5-8 by April 2014. Profile Classes 5-8 equate to approximately 164,000 customers and 17.5TWh of annual energy (10% of the non half hourly market's energy and 1% of the number of customers). See Figures 1 and 2 below.





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**Figure 2. Annual Non Half Hourly market energy (TWh)**



In principle we believe that HH settlement is the most natural choice for Advanced meters as the meter is capable of recording and storing half hourly data. The Advanced meters that are being rolled out for customers in Profile Classes 5-8 are either CoP5 or CoP10 meters and therefore fit into the existing HH settlement arrangements. Furthermore, these meters will have remote communications with their associated benefits. However, there will be costs and impacts of doing so and the perceived barriers that have been identified in the earlier part of the PSR analysis need to be overcome. Therefore, the aim of the CBA is to understand these and quantify the impacts, costs and benefits of mandatory half hourly (HH) settlement for all non half hourly customers currently in Profile Classes (PCs) 5-8.

### 2.1 CBA Requirement

Currently Suppliers have the choice of whether to settle their customers as HH or NHH where the demand is below 100kW. So to understand what HH settlement would mean for Suppliers and the market, the CBA is based on the following requirement:

**'All Suppliers will settle their PCs 5-8 customers as HH by April 2014. This deadline is driven by the Supplier's licence requirements to have installed Advanced (HH capable) Meters by 6 April 2014.'**

We believe that using the HH meter data available from the Advanced meter will enable a Supplier's settlement bills to accurately reflect the customers true consumption. HH settlement is more accurate and will avoid the smearing effects of profiling NHH meter data. The date of 06 April 2014 aligns with the date mandated for the completion of the roll out Advanced metering for customers in Profile Classes 5-8.



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Suppliers are currently installing Advanced meters for their PC 5-8 customers and it is believed that the majority of these will be installed in the next year. Under the CBA, Suppliers will have the choice on when to convert the settlement of these customers to HH. The approach adopted by the Supplier could range from at the installation of the Advanced meter, to a planned transition using the change of Measurement Class (CoMC) process. As long as all the Supplier's customers are settled by the licence requirements date of 6 April 2014.

The other three main requirements of the CBA study are:

1. **Settled in Measurement Class 'E'.** All these customers must be registered in the below 100kW Measurement Class. This will aid further analysis and identification of any issues in future;
2. **99% actual HH data by R1** Reconciliation Run (D+39WD). This is where the existing serial SP08c is changed from 99% at RF; and
3. **Profile Classes 5-8 are discontinued.** This is where these Profile Classes would no longer be maintained and not used to settle these customers. However, they would be continued to be used in Settlement for Unmetered Supplies.

The CBA scenario will identify costs and impacts due to mandated HH settlement compared with NHH settlement for all customers in PCs 5-8.

The detailed requirements of the CBA, the baseline it is being compared to and the underlying assumptions are set out in more detail in Appendix 1.

Once the requirements of the CBA study were established, we sought to identify the impacts and costs compared with the current obligations. To do this we issued an impact assessment to the affected parties.

## 2.2 Impact Assessment

The impact assessment document set out the context of the PSR work, the CBA requirements, the baseline requirements it was comparing them to and a set of questions targeted at specific parties. See Attachment C or [CBA Impact Assessment](#). It was issued to Suppliers, their agents, Distribution Businesses, MRASCo and National Grid on 25 August 2010. At the same time ELEXON undertook an impact assessment on the BSC arrangements and its internal processes. Responses were requested back by 08 October 2010.

The questions were set out for the following parties:

1. **Suppliers:** Cost and impact information was requested split by; one-off set up, ongoing operational and % increase in agency costs. Suppliers were asked for any benefits or implications for Suppliers of HH settlement. Views were also sought on if and when HH settlement should be mandated;
2. **Supplier agents:** We requested information on any issues or economies of scale that Meter Operators, Data Collectors or Data Aggregators could identify;
3. **Distribution Businesses:** Parties were asked to provide one-off and operational costs and information on the benefits of having access to HH data for these PC5-8 customers. As major issues on HH DUoS charges had been identified earlier in the PSR work, we asked what changes to the Common Distribution Charging Methodology (CDCM) are necessary to address the perceived barriers;





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4. **National Grid:** Costs and impacts were sought regarding the process for calculating Transmission Network Use of System (TNUoS) charges and whether any changes would be required to the TNUoS charging methodology. Would there be any benefits of having access to HH data for the PC5-8 customers; and
5. **MRASCo:** Cost and impact information was requested and if there were any issues relating to registration processes governed by the Master Registration Agreement (MRA).

ELEXON also asked all parties on their views on the implications or lessons that could be learnt for Smart metering and customers in Profile Classes 1-4.





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## 3 Cost Benefit Analysis: Impact Assessment responses

The following section details the responses that we received to each question in the Impact Assessment document (Attachment C). For the full non confidential responses see Attachment D.

In summary the responses received on the impact assessment of mandatory HH settlement for customers in PCs 5-8 were:

- 1) Good response to the impact assessment request with 25 parties sending in their comments:
  - a) Six 'big' Suppliers and one small Supplier;
  - b) Eight agents (and one third-party data retriever);
  - c) Seven Distribution Business, including one independent;
  - d) National Grid;
  - e) MRASCo;
- 2) Support for HH settlement, however when it was cost effective to do so:
  - a) Main concerns were higher HH DUoS charges and perceived increases in Supplier agency costs. Also it was noted the different contractual approach of the customer appointing the HH Meter Operator;
  - b) Some felt that a clear mandate would 'focus minds' and lead to these barriers being removed;
- 3) Varied set of Supplier responses:
  - a) Some provided detailed information on impacts and costs (with some of these confidential);
  - b) Some responses stated 'significant' impacts;
  - c) Some stated 'too early' or 'depends on solution';
  - d) Some put forward minimal costs and impacts;
- 4) There was a clear one-off cost for undertaking the Change of Measurement Class (CoMC) process from NHH to HH. This was a transaction cost for each MPAN;
- 5) There was mixed set of one-off implementation costs:
  - a) Internal system costs and impacts ranged from zero to significant;
  - b) Uncertainty due to smart developments and requirements;
- 6) Operational costs for Suppliers in servicing these customers as HH were widespread:
  - a) From zero to significant;
  - b) Some of costs identified were comparing NHH manual read to HH AMR. However, the operational cost differential should be between NHH AMR and HH AMR though;



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- 7) Supplier agents had no/minimal impact and could easily cope with increased volume of meters and customers being settled HH;
- 8) Impacts on DUoS charges for these customers were noted as significant. This view was re-iterated (as in the responses to the consultation exercise) and work is underway to review the barriers relating to higher HH DUoS charges;
  - a) This is being reviewed through the Distribution Business working group (N.B. ELEXON paper has been sent for DCMF (Distribution Charging Methodology Forum) consideration of way forward to balance HH and NHH charges for PCs 5-8);
  - b) Distribution Businesses support HH settlement and getting HH data and recognise the potential need for aggregated data to minimise impacts on all parties with increased data volumes;
- 9) TNUoS charges: there was no impact to National Grid's processes or systems, just a change in amount of money recovered under the HH charges. Work would be required to address the balance of charges between NHH and HH though; and
- 10) No impact on the MRA, just suggested consideration of a new bulk CoMC process under the BSC (if required).

The following sections provide a detailed summary of the responses to the impact assessment questions by party type; Supplier, Supplier agent, Distribution Business, National Grid and MRASCo. For each type of party responses, there is also the PSRG's consideration of them.



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## 1.1 Supplier Responses

Q1. What are the additional set up costs and impacts (and any lead times) in settling all your Profile Class 5-8 customers HH by 6 April 2014 (assuming that Advanced metering is installed)? Please break down your costs by MPAN (or per portfolio) for:

- a) Internal process and systems
- b) Supplier Agency costs, Meter Operation, Data Collection, Data Aggregation;
- c) BSC settlement costs, e.g. qualification to a HH Supplier or due to increased volumes;
- d) Any processes to support the increased HH volumes for DUoS and TNUoS charging; and
- e) Others.

a) Internal process and systems	<p>There were a mixed set of responses to this question. While one Supplier indicated that they had no internal cost changes, as they only have HH Customers, others identified considerable impacts to both internal processes and systems. A couple of Suppliers stated that impacts would depend on the solution to be implemented. It was also identified that the cost would also be different depending on the billing to settlement relationship. If customers were still billed on a non half-hourly basis there may be less impact than having to align both billing and Settlement. The level of support required for the CoMC process was also identified as a potential issue that may impact costs.</p> <p>Some Suppliers felt it was too early to respond and some felt that costs and impacts would be minimal if there was no large step change or if half-hourly settlement was mandated at an early stage. 3 Suppliers provide confidential costs and impacts.</p>
b) Supplier Agency costs, Meter Operation, Data Collection, Data Aggregation	<p>Suppliers identified significant costs and impact associated with re-negotiation of contracts especially where customers have their own contracts. There was also the issue that Supplier Agents would need to be HH accredited which may have cost implications for some Suppliers. A transaction cost of £15-20 per MPAN for CoMC, CoA was identified by one Supplier. One stated that Meter Asset Management (MAM) activity could run to £1.165m. However, it was later clarified that this was a sunk cost under the mandated AMR roll out and was not used as part of the CBA cost assessment. 3 Suppliers provided confidential costs and impacts.</p>
- c) BSC settlement costs, e.g. HH qualification or due to increased volumes	<p>Three of the respondents indicated that they felt the impact of changes to BSC Settlement cost would be minimal. However a dependency was identified relating to the cost change for recovering HH SVA costs. 3 Suppliers provided confidential costs and impacts.</p>



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- d) Any processes to support the increased HH volumes for DUoS and TNUoS charging	The responses to this question ranged from considerable to minimal. The respondents that indicated minimal process changes only identified issues relating to scalability and the timing of any potential mandate for HH Settlement. 3 Suppliers provide confidential costs and impacts.
e) Others	Other impacts and costs identified included the potential impact on NHH performance and costs to manage CoMC process. Additionally, impacts relating to Electralink and DUoS charges were stated to be unsustainable if large numbers of customers are moved to half-hourly Settlement.

### Question 2: Provide ongoing operational costs by MPAN or per portfolio for settling all your Profile Class 5-8 customers HH.

One Supplier identified significant costs relating to the maintenance of HH standing data, HH SVA business validations, HH DUoS invoice processing and Supplier Agency Charges invoice processing. Another Supplier identified the impact of HH DUoS charges at first prior to a rebalancing which would reduce the affect on their portfolio and gave additional processing costs of approx. £20k a year.

Three Suppliers said it depended on the detail of the solution. Cost would depend on how the customer is billed and if the data - is to be provided to them. Another identified the need to review the Meter Operator (MOA) agency contract model as currently the customer appoints the HH MOA. The increased effort to support HH metered customers, forecasting, billing, data provision, queries was also identified as potentially impacting costs.

Some Suppliers were not able to supply costs or stated that they were not significant. Another gave the per MPAN increase in DUoS charges cost at £500 per annum.

### Question 3: What do you believe to the likely impact in % terms in agency costs (MO, DC, and DA) to serve an MPAN as HH against the existing costs to serve as NHH, taking into account economies of scale and lower performance requirements for Measurement Class \_E?

The non confidential Supplier responses showed percentages from 14% to 30-40% (based on DC/DA increases). It should be noted that one response quoted a 275% increase, but it was subsequently revised to 14% (as the 275% was comparing NHH manual read to HH AMR, when it should be comparing NHH AMR with HH AMR). One Supplier said that these costs were confidential and may increase once the DCC is in place. The overall responses ranged from minimal to significant. The issue of HH customers currently



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Question 3: What do you believe to be the likely impact in % terms in agency costs (MO, DC, and DA) to serve an MPAN as HH against the existing costs to serve as NHH, taking into account economies of scale and lower performance requirements for Measurement Class \_E?

contracting with their own MO was another issue raised in relation to existing NHH contracts.

At portfolio level one Supplier said that increased Meter Asset Provider charges per annum would be about £675k and increased DA/DC/DR charges £450k per annum but that these may be reduced in a more focussed HH world when commercial contracts would be reviewed.

Question 4: Taking into account any increased costs, is there a benefit for a Supplier's processes in HH settlement (and HH data) for a PC5-8 customer? For example, demand forecasting, reconciliation of purchases and sales, tariff product innovation and carbon benefits?

A couple of Suppliers felt there were no clear benefits as they were outweighed by costs or there were 'potential' benefits and significant challenges.

Benefits were identified by 6 parties for Demand Forecasting, Contract sales, Customer Invoicing, CRC Management, Product innovation and better planning of settlement cash flows.

Both DUoS and TNUoS were mentioned as potential dis-benefits under the strawman scenario and customer benefits were related to their HH profile. It was also noted the National Grid may need to re-balance NHH/HH charges.

Issues with BSC compliance measures were identified for the remaining NHH portfolios.

The availability of data was both a benefit and an issue in that there would be increased volume of data and more complexity in customer dealings, billing and data provision.

It was also identified that customers with a flatter load profile would benefit from lower costs being HH settled rather than NHH and therefore could benefit from being settled HH.

Question 5: What are the implications for customers if settled HH?

It was identified that the customer would have increased DUoS charges, increased overheads costs from Suppliers and increased agency charges. Additionally, the current HH customers contract with the MOA, but this was expected to change to Supplier.

On the plus side the customer would benefit from more reflective prices, more accurate bills, a larger number of tariffs would be available and the option to be billed site specific DUoS correctly. Fewer meter



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## Question 5: What are the implications for customers if settled HH?

read site visits would also be required.

The billing method was also identified as impacting customers. If HH billed, customers can manage their own consumption better, demand management incentives to customers could be provided and there would be better management of micro-generation data. It was also noted that the customer would need to be aware of the CRC requirements/qualification relating to HH metering and requirements for participation or information disclosure.

It was noted that new contracts may need to be agreed with customers to reflect the change to HH settlement.

## Question 6: When do you think an Advanced Meter should be mandated to be settled HH:

- a) Never (should be Supplier choice as now)
- b) As soon as an Advanced Meter is installed
- c) By 6 April 2014
- d) Other

Three Suppliers felt that 'By 6 April 2014' was appropriate to mandate HH settlement. They felt there was sufficient time to install and settle NHH with a short transition phase in early 2014 to HH settlement. This would help to 'flatten load' and reduce energy costs, give certainty, focus minds with a phased approach and targets.

Five Suppliers felt that it should not be mandated for the foreseeable future, to be evaluated later when all the costs and risks are available, better understood and it is cost effective to do so. Analyses should be undertaken to establish a 'break-even point' and work out which options is best (mandatory, optional or never).

## Question 7: Although the CBA is focussed on Profile Classes 5-8, what are the implications or lessons that can be applied to Profile Classes 1-4?

Suppliers noted that the cost differential for HH will be higher because PCs 1-4 are read quarterly. That there would be a massive increase in data being exchanged and stored which are potentially beyond current systems and that some form of data aggregation will need to be considered.

Issues with energy resolution in data flows (D0275 and D0036) were raised as it may lead to volume errors.

New form of meter governance (e.g. a Code of Practice (CoP)) for smart meters would be required and that two variations for PCs 1-4 would be needed; one for customers with advanced meters, and one for



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**Question 7: Although the CBA is focussed on Profile Classes 5-8, what are the implications or lessons that can be applied to Profile Classes 1-4?**

customers with smart meters.

Customers with sites in both PCs 1-4 market and HH market and may wish to trade all HH and could be given the choice.

It was noted that costs of HHDC are likely to reduce with the Data Communications Company (DCC).

GSP Group correction for PCs 1-4 sites would need to be considered in light of smart.

The PC 5-8 Advanced meter roll out experience may provide insight on how communicate with customers in PCs 1-4.

**Question 8: Do you have any other comments you wish to add?**

The Supplier responses included the following comments.

Several issues with DUoS need to be addressed:

Will these customers be settled using the D0036 flow along with all other HH customers?

Would it be worthwhile considering the option to retain the D0030 billing for these customers but use actual instead of estimated data?

Will Distributors be expected to revert back to monthly demand billing in line with HH customer billing?

Will Distributors be instructed to bill DUoS in a specific way or will the process flexible in allowing them to do their own thing?

DUoS charges are currently capped so there would need to be a reduction in the overall DUoS charges associated with HH if this population increases significantly.

Using Profile Class to define settlement mandates need to be considered as not ideal and creates potential issues with Supplier licence requirements.

There is also a similar issue with BSC Modification Proposal 253 interaction and use of '>100kW' that will not include anything defined as 'Measurement Class E'.

There is a need to investigate impact on performances assurance measures as currently AMR helps serial performance actual data.

Implicitly the HH Settlement approach is fairer since there is no socialising of costs.

There is a need to review various processes, e.g. the end to end CoMC process.





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## PSRG discussion

The PSRG noted the varied responses from Suppliers on costs and impacts (only the non-confidential costs were stated to the group).

The group:

Noted that although the responses were varied when it came to costs and impacts, the underlining message was that the barriers need to be removed for HH settlement, e.g. HH DUoS charges and Supplier agency costs. Some members questioned the costs that were given and wondered whether the impacts were as significant as some were stating;

Noted that a number of responses said that costs were dependent on other factors, such as internal business strategy, developments already underway on business systems and process changes and the developments for the roll out of smart metering. In particular what systems changes might be required to support the new smart meter processes;

Noted that HH DUoS billing could have a cost/ impact. The current scenario is based on the assumption that DUoS charges are based on dis-aggregated data, which is not feasible for large customer numbers and some form of aggregated data would be required (perhaps similar to the current NHH 'super- customer' approach). The PSRG said that the biggest barrier under these costs would be that there would be an increase in costs of about 25%, which would be unacceptable to the customer;

Noted that the majority of the respondents implied that they could scale their existing systems. They also noted that parties may also be doing system changes under smart metering then for PCs 5-8 would not have as much of an impact. Smart will put in a new framework which could potentially get rid of some of the issues within Profile Class (PC) 5-8 but could also create new issues;

A PSRG member said that once the barriers were removed, the responses to these questions would be completely different. The PSRG also discussed what would happen if the industry got to a position where all Suppliers' customers had HH capable meters and the final decision relied on the customer. This led to point of whether or not the industry supported settling HH regardless of whether the meter installed is HH capable. This also raised the question of what benefits there are to settling HH and Could there be cross-subsidies if Suppliers chose to settle certain customers HH where it was beneficial to do in comparison to the load shape that would have applied. The PSRG noted that at present the Supplier (typically the customer chooses) could choose whether to be settled HH or NHH;

Some of the PSRG felt that some of the operational costs quoted were on the high side and that the main cost for the implementation of mandatory HH settlement was the change of Measurement Class process (CoMC) from NHH to elective HH. Some members believed that the CoMC transaction costs were also high as they believe the CoMC process where no meter change was involved was a far simpler process just involving a number of settlement 'D' flows and could be done remotely. Others felt that some of the CoMC costs of £150 per meter were too high but that a cost of about £30-40 was more realistic;

Noted that the increases in costs need to be taken in context (however, no information had been provided on the level of service being given currently). These would depend on the level/type of service being provided at the start. For example, if a high quality service was being provided already then the cost differential to HH Settlement may be different. Therefore, this could account for the cost spread given as it



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would depend on where you start from. They also believed that some of costs and impacts quoted were where parties were treating HH as mandatory HH (>100kW) where the costs to serve would be higher;

A PSRG member said that it would be useful to understand the CoMC timescales and costs where the Advanced meter is already installed. It was pointed out that meter re-configuration would still be required and this can be done remotely. It was also noted that there were no requirements for proving tests for elective HH making this process easier than for mandatory (>100kW) meters;

A PSRG member felt the £657K quoted in response to question 3 increased Meter Asset Provider charges per annum were overstated, but recognised that this also depended on the number of metering systems in the Supplier's portfolio;

Generally supported the majority of comments made in the responses to Questions 4-6 on benefits of HH settlement, implications for customers and when HH settlement should be mandated;

The underlining theme of the responses is that at some point PC 5-8 should be settled HH. The PSRG supported the approach of HH settlement when it was cost effective to do so. The PSRG discussed 'cost effective' to whom? Was it to the Supplier, Suppliers as a community or industry as a whole (including the consumer?). The Group believed that it was foremost to improve settlements and whether if a customer is settled HH they can still be billed on either HH or NHH tariffs. They agreed that the barriers of HH DUoS charges can be fixed, it was question of addressing the 'old mindset' of HH and agency costs;

A PSRG member was of the opinion that if Suppliers are willing to settle HH then they are more likely to try and overcome the barriers. The main barriers are DUoS charging, logistics around change of class measurements and agency costs (and contractual arrangements for HH). The barriers for HH DUoS can be addressed through changes to the CDCM, however agency costs can only be tackled through commercial market pressures; and

Noted the main themes from the responses to Question 7 on implications or lessons learnt for Smart metering. Some members of the group felt that by mandating HH settlement for customers in PCs 5-8 this would be seen as a 'trial' for smart where the issues, risks and most appropriate settlement approach could be worked out. This would enable the 'meter-to-bank' process for smart to be the most efficient, effective and economic. The PSRG supported the fact that a new form of governance would be required for smart meters and that multiple solutions may be required for customers in Profile Classes 1-4, e.g. one for domestic customers in PCs 1-2 and another for non domestic in PCs 3-4.

## 3.2 Supplier Agents and Meter Providers

**Question 9: What issues do you believe there will be to service an extra 164,000 customers as HH by all service providers by April 2014?**

Four Agents considered that there were minimal issues including the view that MOAs had no issues and there was little impact on NHH DC/DA. Customers could benefit from value added data services and more actual data would be available at initial Settlement.



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**Question 9: What issues do you believe there will be to service an extra 164,000 customers as HH by all service providers by April 2014?**

There was a view that the staffing levels can be adapted and hardware acquired. Some Agents would need to re-qualify. Additionally, Agents would need to review their operational processes.

One Agent identified that it would need a new system or a re-build.

Two Agents noted that Bulk CoMC introduced more risk and would not be favourable or there would need to be a robust process.

Other issues identified were:

- The need to reconsider AA performance criteria;
- Increase in cost for DC service or need to re-negotiate contracts; and
- Signalling/Access issues are likely to increase.

**Question 10: Can you identify any economies of scale or any system/ data transfer issues associated with an extra 164,000 HH metering systems?**

Three agents stated that economies had been identified but were confidential or were not defined in any detail in the response and there would be some savings that will result from the sharing of fixed cost overheads.

Four agents said that no economies had been identified.

There should be no issues for NHH as they would be removing MSIDs that are currently settled NHH.

In terms of communications costs, the manual processing costs, and general overheads the communication costs are lower for these customers if they are dialled less frequently than Measurement Class C customers.

Current data transfer arrangements are adequate to handle these volumes so long as the process is managed systematically.

Other issues identified that a move to HH settlement could see a 75% increase in requirements for site visits to obtain hand held reads, due to communications' faults

Dis-benefits identified included:

- Additional DTN volumes and additional costs;
- Electralink would be required to check that the Remote User Group (RUG) set up could handle the increase in DTN traffic. A D0036/D0275 for one MPAN and one day of HH data is 9 times bigger than a D0010 for a similar metering system; and
- It will significantly increase the cost of data transfer for HH agents and Suppliers.

One NHH Agent identified a dis-benefit to itself as it was not HH qualified.



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**Question 11: Although the CBA is focussed on Profile Classes 5-8, what are implications or lessons that can be applied to Profile Classes 1-4?**

The responses identified that there would be little impact on NHH MOAs but significant on DC and that a new Measurement Class would be preferable.

Some Agents declined to comment due to the uncertainty on scope/role of DCC.

Agents reported no major problems scaling up the HHDC/DA process should the market be extended to PC 3-4 but extending the market to PC 1-2 is a major step change. The challenge is scalability of existing systems and processes. If the proposed WAN element of the residential smart metering system is designed with this prospect in mind, then they do not foresee the bottleneck being with the HHDC/DA or the associated data collection process.

Another agent stated 'We do not foresee any technical obstacles in expanding this to Profile Classes 1-4 however the commercial rationale for doing so is less clear'.

Other views stated included:

Perhaps the infrastructure planned for the Smart Meter rollout could provide the opportunity for certain multi-site customer groups, such as local authorities or organisations with large housing portfolios, to benefit from settlement on a HH basis; and

A new Measurement Class using the current Measurement Class E performance target of 99% of actual data by RF would ensure that NHH sites for PCs 1-4 could be dialled data at a frequency suitable to meet the performance target without unnecessary communication costs.

**Question 12: Do you have any other comments you wish to add?**

Other comments included that they were Supportive of review but it may be premature. That it should be elective not mandatory and that HH was only way to get benefits from the technology. Supplier Billing can evolve more tariffs and lower HH agent costs and it would allow for a shortened settlement timetable, potentially to R2 and most certainly to R3.

## PSRG discussion

The PSRG noted the common themes running through the Supplier agents' responses.

The group:

Noted that the majority of agents could process the increased number of HH meters with minimal impact;

Noted that settlement would benefit from more actual data being available earlier. At present over 99% of HH meters are based on actual data at SF. The Group acknowledged the issue that there may be a



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performance issue in achieving the 97% by Final Reconciliation (RF) for the remaining PCs 1-4 meters settled NHH. This was due to the benefits in getting meter readings for the PCs 5-8 meters that would be brought about in the Suppliers total portfolio (that had now moved to HH);

One or two responses said that there would be either system, contractual or operational process impacts;

Noted that impacts for the smart world would be different due to Data Communications Company (DCC) approach and the current uncertainty of the DCC scope until a decision had been made by DECC; and

Agreed that the impact on agents would be small and that by mandating HH settlement costs to serve would come down and innovative service offerings would be made by agents.

## 3.3 Distribution Businesses

Q13. What are the additional costs and impacts if all Profile Class 5-8 customers are settled HH by 6 April 2014?

Please break down your costs (one-off and ongoing operational), timescales and impacts for:

- a) Internal process and systems;
- b) Supplier Meter Registration Service (incl. level of transactions, constraints);
- c) DUoS Charging; and
- d) Others

The majority of responses indicated that there would be an impact on internal systems and processes due to the increased volume of site-specific billing. The one-off costs quoted were in a range from £30k to £80k. Some responses also identified ongoing operational costs (of £20k to £40k per annum).

Most responses indicate that the impact on SMRS would be manageable, although some of the responses identified a need to manage any bulk Change of Measurement Class process. One of the responses also flagged up that data transfer charges (for use of the Data Transfer Network) would increase.

Question 14: What benefits would you consider there to be from having HH data for these 164,000 customers?

The majority of responses identified a number of benefits, including:

Better quality data with fewer estimates and errors would lead to more accurate DUoS charges and better reporting of losses;

Better data for system planning and management. One response suggested that this could lead to fewer requirements for reinforcement; and another that it would bring benefits in adapting to the



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**Question 14: What benefits would you consider there to be from having HH data for these 164,000 customers?**

needs of the low carbon economy;

Better data e.g. identification of consumption anomalies, or customers above 100 kW not settled in Measurement Class C; and

Potential to apply cost-reflective reactive / capacity charging to below-100kW customers.

One response disagreed, stating that benefits would be minimal (but there was no supporting information for this view).

**Question 15: What changes do you believe are necessary to the Common DUoS Charging methodology to address the perceived barriers in HH DUoS charges for customers currently in Profile Classes 5-8 with Advanced Meters (see DUoS charges analysis in Appendix A section 6.1 of the consultation document)?**

The majority of responses were supportive of reviewing DUoS tariffs for Half Hourly customers below 100kW. Specific suggestions were as follows:

That the tariffs could be same as NHH (albeit billed on HH data, and hence more cost-reflective at the individual customer level);

That HH tariffs for below 100kW needn't be done on a site-specific basis, but could use aggregated data;

That NHH tariffs should be moving closer to HH tariffs, as the CDCM envisages a 'delinking' of NHH tariffs from metering configurations; and

That the appropriateness of having both a fixed charge and a capacity charge for below-100kW HH customers should be reviewed.

One response suggested that it would be important to 'police' which Metering Systems were assigned to Measurement Classes 'C' and 'E', if the tariffs for the two were different.

**Question 16: How would you ensure that you do not over recover HH DUoS charges in light of the increased HH Metering Systems?**

The majority of responses indicated that there would not be any significant overcharging, particularly if any movement of customers from one tariff to another could be forecasted (and hence taken into account when setting tariffs).

The majority of responses also indicated that if there was an over-recovery (due to significant and





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Question 16: How would you ensure that you do not over recover HH DUoS charges in light of the increased HH Metering Systems?

unexpected transfers of customers from NHH to HH), this would be returned to Suppliers.

Question 17: Although the CBA is focussed on Profile Classes 5-8, what are implications or lessons that can be applied to Profile Classes 1-4?

A number of responses suggested that:

Tariff innovations for below-100kW HH customers (see question 15 above) could be applied to Profile Classes 1-4 as well as 5-8; and

Due to the large volume of customers in these Profile Classes, it would be even more important to bill using aggregated data (a 'Half Hourly super-customer' approach) rather than using site-specific billing processes.

One response suggested that the proposal to mandate HH settlement (for customers with HH-capable metering) could apply to Profile Classes 1-4 as well as 5-8. Conversely, one response suggested that HH settlement for Profile Classes 1-4 would lead to an 'explosion' in costs.

Question 18: Do you have any other comments you wish to add?

Specific comments raised were as follows:

Mandatory e-billing via D2026 and D2021 to mitigate impact of additional HH accounts;

One Distributor was keen to have customer-specific HH data from smart meters, but didn't believe that this necessarily required HH tariffs;

That GSP Group Correction should be applied to HH as well as NHH;

That the CoMC process for switching from C to E or vice versa should be reviewed (e.g. do Meter Technical Details need to be sent?); and

That the definition of PC3/4 needs to be reconsidered if PC5-8 no longer defined by MD meter.

## PSRG discussion

The PSRG noted the common themes running through the Distribution Businesses' responses and the clear support for HH settlement.

The group:



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Noted that the impact on Distribution Businesses' systems and processes to handle the extra 164,000 meters. However, these impacts are based on the current requirements of individual HH DUoS billing which was seen by many as not the best approach and advocated an aggregated data solution;

Noted the benefits of having HH data as DUoS charges would be more accurate, there could be better calculation and reporting of losses and more cost effective system planning and network reinforcement;

Noted that the majority of responses stated that new tariffs should be developed for the <100kW customers with some stating that a NHH DUoS charging mechanism could be used. This would go some way to addressing the current perceived barriers in high HH DUoS charges for PCs 5-8 settled HH. If no changes were made there would be over-recovery through HH DUoS charge which would end up subsidising the NHH DUoS ; and

Noted that Distribution Businesses were supportive of developing new arrangements under the CDCM for HH DUoS charges for <100kW customers settled HH. The Group noted the ELEXON paper (see Attachment E) on possible solutions that had been sent to the Commercial Operations Group (COG). This is being progressed through the Distribution Charging Methodology Forum (DCMF). A Working Group has been established (through the COG and reporting back to DCMF) to progress a number of CDCM issues (including this one). Progress so far is that:

- At its meeting 22 October, the DCM subgroup of the COG scoped the development of measurement class E half hourly tariffs as 'Complex - requiring significant modelling' and its priority as 'Medium';
- Medium priority items are targeted for delivery in time for April 2012 implementation; and
- Given the work involved the working group believe that April 2012 is a realistic target date for review. There should be visibility to industry parties through DCMF of the development in spring 2011 followed by a DCUSA Mod on which suppliers will be able to vote in Autumn 2011 with indicative prices produced by 31 December 2011.

The PSRG recognised that it would be difficult to mandate HH settlement for Profile Classes 5 to 8 until the HH DUoS charge issues were resolved. Additionally, there was concern about the proposed timescales (April 2012) for resolution of these issues given the timescales elapsed in defining the CDCM;

The PSRG also recognised that the commercial barriers would not necessarily be addressed unless a mandate was made. OFGEM were invited to consider if a modification could be approved subject to a future baseline of given the proposed timescales for resolution of the DUoS issues; and

The PSRG noted the concerns over the timescales to resolve the issues with the CDCM and the potential that the issue might not be resolved. The PSRG stated that the risks should be documented (see section 4.4). The PSRG still felt that if the changes to the CDCM were in place for April 2012 that would still give 2 years (April 2104) to migrate 164,000 meters to HH settlement using the CoMC process. However, if this 2 year timescale was reduced there would be greater need for a new bulk CoMC process.



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## 3.4 National Grid

### Question 19:

What are the costs and impacts if all Profile Class 5-8 customers are settled HH by 6 April 2014? Please break down your costs (one off and ongoing operational), timescales and impacts for:

- a) Internal process and systems;
- b) Changes to TNUoS charges; and
- c) Others. Please provide rationale.

An increase in Half Hourly settlement would not impact National Grid systems or processes. However, National Grid would like to receive forecasts (at the tariff setting stage) of the number of customers moving from NHH to HH, in order that the impact can be quantified and allowed for within the TNUoS charges.

The removal of Profile Classes 5 to 8 from the population of NHH customers would be expected to increase slightly TNUoS charges for the remaining NHH customers. HH and generation charges would be unaffected by the change.

It should be recognised that Project TransmiT is a current Ofgem review of the TNUoS charging methodology. Therefore the TNUoS impact of this change may differ dependent on the outcome of the review.

**Question 20:** Are there any changes that you believe are necessary to the TNUoS Charging methodology to address the increased 164,000 Metering Systems in 2014? Please provide details.

None, the TNUoS charging methodology will cater for the increase in the HH demand base without change. The impact will be to increase cost reflectivity of TNUoS charging.

**Question 21:** What benefits would you consider there to be from having HH data for these 164,000 customers? Please provide details

Assuming that the signal provided by HH TNUoS charges is passed through to end consumers in an effective manner, the move to smart metering should make consumers more informed about their energy usage and the resultant impact on the system (reflected through price signals). Put another way, the benefit of introducing HH metering for these consumers will be increased cost reflectivity of charges, which will allow consumers to better react to the cost signals if they choose.

## PSRG discussion

The PSRG noted that there was no impact to National Grid's processes or systems. There would be a change in amount of money recovered under the HH charges. Work would just be required to address the balance of charges



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between NHH and HH meters to ensure there was no over-recovery on the HH side (and in affect that HH were not subsidising NHH charges).

## 3.5 MRASCo

Question 24: What are the costs and impacts if all Profile Class 5-8 customers are settled HH by 6 April 2014 on the registration processes governed by the MRA? Please break down your costs (one off and ongoing operational), timescales and impacts for:

- a) Internal process and systems;
- b) Changes to the MRA; and
- c) Others. Please provide rationale.

a) **Internal Processes and Systems**

The definitions under the MRA of HH and NHH Metering Points are as follows:

- HH=||...provides measurement of the supply of electricity on a half-hourly basis||;
- NHH= -...provides measurement of the supply of electricity other than on a half hourly basis||.

The MRA does not specify how a Metering Point should be treated, only a differentiation where measurement is provided half hourly or otherwise.

MRASCo noted that:

MPAS Validation will require HH agents to be registered to any MPAN with a HH measurement class (i.e. C or E).

the requirement for the change of measurement class and updates required to the line loss factor classes that would be required.

that costs were unaffected as charges are based on Registered MPANs.

b) **Changes to the MRA**

MRASCo pointed out that the CoMC process was set out in the Working Practices Product Set (WPPS), rather than the MRA Provisions and that there are some elements that depend on Supplier preference. That for CoMC a deterministic roadmap may provide a more robust solution for the market as whole and that approximately 6-9 months would be required to develop this through the change process.

c) **Others**

There are no other costs and impacts currently expected.

Question 25: Although the CBA is focussed on Profile Classes 5-8, what are implications or lessons that can be applied to Profile Classes 1-4? Please provide details.

There is no impact on the MRA beyond those noted above.

## PSRG discussion



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The PSRG noted that there was no impact on the MRA's requirements or processes. A suggested consideration of further detail to the existing CoMC process under the BSC was noted. There was potentially the need for a new BSC bulk CoMC process, if it was required due the migration approach by Suppliers, or if there were shorter timescales as the changes to the HH DUoS Charges take longer to implement than April 2012.

## 3.6 BSC and ELEXON

ELEXON's internal impact assessment identified a number of potential impacts:

The discontinuing of load research for Profile Classes 5-8 would imply a reduction in workload for the Profile Administrator (PrA), and hence a potential cost saving. Changes would be required to BSC Procedures BSCP510 ('The Provision of Sampling Data to the Profile Administrator') and BSCP516 ('Allocation of Profile Classes and SSCs for Non-Half Hourly SVA Metering Systems Registered in SMRS');

The requirement to collect 99% of data for the first Reconciliation run (R1) for meters in Measurement Class 'E' would require changes to the PARMS system and associated BSC Procedures. This was believed to be minimal;

The requirement to use Half Hourly settlement for Profile Classes 5-8 would potentially require changes to documentation relating to SVA Qualification, such as the Self Assessment Document (SAD) and Guidance Note/Storyboards;

The move from NHH to HH settlement would potentially change the impact/probability of existing settlement risks and/or create new settlement risks. These risks would be assessed and monitored through existing processes for maintaining the Risk Evaluation Register (RER). Given the April 2014 deadline there would be a particular impact on the RER review for 2013/14 (starting early in 2012); and

The straw man assumes that Measurement Class 'E' would remain outside the scope of Technical Assurance checks. However, this is something the Performance Assurance Board (PAB) would probably want to keep under review.

Appendix 2 provides further detail on the impacts on the BSC.

## 3.7 Impacts on GSP Group Correction Factors and Corrected Volume

It should be noted that if 164,000 Profile Class 5 to 8 customers are moved to HH, and the existing GSP Group Correction Factor (GSPGCF) methodology remains unchanged, that GSPGCFs may increase in range due to the method of calculation. Modelling the likely effects on GSPGCF suggest changes in most instances will be modest. The changes in GSPGCF could be between -0.04 to 0.03.

Most GSP GCF volume errors are associated with Profile Classes 2 and 4 and changes in the corrected volume are likely to be modest when moving Profile Class 5 to 8 customers from NHH to HH.



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However, it should also be noted that the 'corrected volumes' are likely to fall due to the accurate Settlement of the customers formerly on Profile Classes 5 to 8. Where 'corrected volume' is the difference between the GSP Group Take and the sum of the HH aggregated volume and the NHH Profiled volume.

Appendix 3 provides further detail on the likely impact on GSP Group Correction.

## 3.8 Impact on the SVA specified charge summary and rest in appendix

Currently the SVA Specified Charge is £0.70 per HH MSID per month. With approximately 115,000 HH MSIDs this recovers approximately £0.96m a year. The SVA Specified Charge is currently being reviewed with the aim to present the findings to the January 2011 Panel meeting. This will coincide with the budget figures for the BSC Year commencing on 01 April 2011. Based on current budgetary estimates for the next year, the SVA Specified Charge would stay about £0.70 per MSID per month (114,500 MSIDs). If all meters in Profile Classes 5-8 were settled HH this would add a further 164,000 MSIDs and change the % energy split for HH/NHH to 53:47. Therefore, the SVA Specified Charge would reduce to about **£0.32** per MSID per month.

Appendix 4 provides further detail on the likely impact on the SVA Specified Charge.



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## 4 Cost Benefit Analysis: Costs, impacts, risks and issues

Seven Suppliers provided impacts and costs; Smartest Energy, Scottish and Southern Energy, RWE npower, British Gas, E.ON Energy, EdF and Scottish Power. These costs and impact responses varied greatly, ranging from good detailed information to high level information indicating either significant impacts or 'too early' or 'depends on the solution'. Of the costs that were given the majority were identified as confidential and there was also a great variation, from zero costs to over £2m per Supplier. To maintain confidentiality we have aggregated these costs and we have also sought to represent the range of costs given. The costs are based on all the information given and where costs were not given these have been extrapolated across all Suppliers and all PC5-8 meters.

The costs can be summarised as:

Cost	Central CBA cost (£m)	Min (£m)	Max (£m)
One off	4.1	2.5	9.3
Operational annual	6.2	0.3	8.3

The central CBA costs for one-off are based on a CoMC transactional cost of £25 per meter; and operational cost (median cost) for agency services increase of £38 per meter.

The next sections describe how the costs were derived with the underlying assumptions.

### 4.1 Supplier Costs and Impacts: Total One-off Costs

Cost and impact information was requested from Suppliers broken down by internal systems/process, agency, settlement, DUoS/TNUoS and other. 5 Suppliers provided actual cost information, of those 3 were asked to be treated as confidential.

The one off costs to Suppliers in settling all the Profile Class 5-8 customers half hourly by 06 April 2014 is **£4.1m** in total across the industry. This cost is based on the following:

1. the transactional costs of the Change of Measurement Class (CoMC) process only;
2. the average cost for CoMC is £25 per meter and there are 164,000 meters for PCs 5-8; and
3. no other costs have been included, e.g. for internal system changes, Supplier Agency or BSC Settlement.

The responses can be summarised as follows:

3 Suppliers provided confidential costs, 3 Suppliers said 'significant' or 'depends on solution' with 2 quoting no costs;

internal systems/process: varied responses were received from no impact (3 Suppliers) to significant and 1 Supplier providing a non zero cost;

agency: 4 Suppliers quoted no cost impact, 1 'significant', 1 not able to provide costs and 1 Supplier providing a non zero cost;

BSC Settlement: 5 Suppliers quoted no cost impact, 1 'significant' and 1 Supplier providing a non zero cost;

DUoS/TNUoS: no impact (4 Suppliers), 3 Suppliers said 'significant' or 'depends on solution';





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Other: only two Suppliers quoted further costs, these being related to the transaction cost of Change of Measurement Class (CoMC).

To baseline these costs we have considered the information given by Suppliers. We believe that the main costs to Suppliers are based on the transactions costs of the CoMC process only. This is because all Suppliers will have to undertake the CoMC process for their portfolio of customers from NHH to HH. A range of costs for the CoMC were given, £15-£36 and we have used the average at £25. Using the range of one-off costs, it would give costs between £2.5m-£5.9m in total.

No other costs have been used due to the range of costs given from zero to significant. Costs were quoted by some Suppliers for internal system changes, Supplier Agency or BSC Settlement and in some cases Suppliers quoted 'significant' costs. Conversely, some Suppliers quoted no costs at all. If these other internal cost impacts were to be included this could add a further £1.6m-£3.4m in total.

However, if the range of 'other costs' in the previous paragraph are added to the range of CoMC costs, the total range for Suppliers would be £4.1m-£9.3m.

## PSRG discussion

The PSRG supported the calculation of one-off costs of £4.1m based on the transactional CoMC process using the limited cost information provided. The PSRG noted the wide differential in costs and some believed that a CoMC process would be simpler than the normal process where the meter is already an Advanced meter. They also noted that if there was a bulk CoMC process defined under the BSC then this transactional cost for CoMC could reduce. Furthermore, it was noted that these costs were based on a manual process, if a Supplier could automate the CoMC process, the operational costs quoted above would be less. However, these costs do not include any internal system changes that would be required to facilitate a bulk CoMC process.

## 4.2 Supplier Costs and Impacts: Total Operational Costs (per annum)

The operational cost in settling all Profile Class 5-8 customers half hourly is **£6.2m per annum**. This cost is based on the following:

1. the only costs incurred are the increased agency costs for HH Automated Meter Reading (AMR) in comparison to NHH AMR;
2. the operational costs are based on a median cost of £38 per meter based on individual responses where costs were given; and
3. no other operational costs have been included, e.g. for impacts on Supplier internal systems/processes, Supplier Agency or BSC Settlement or DUoS. This is based on the majority of responses stating no other costs or impacts other than the agency impacts.

However, other costs were given by some Suppliers and these should be noted as follows:

1. A range of annual cost increases for HH AMR were given, £2 - £150 per meter. If this cost range is used it would give a total annual operation cost increase of between £0.3m-£24.6m. However, from further discussion with the parties concerned it is believed that the £150 per meter cost is unrealistically high and



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should not be used further. The PSRG supported this view. From the cost information provided, an average cost has been calculated at £56 per meter. This would give a total annual cost of £9.2m; and

2. Increased operational costs were quoted by some Suppliers for internal system, BSC Settlement costs and DUoS/TNUoS costs. Also, some Suppliers stated that there were significant costs but did not give actual costs. However, some Suppliers quoted no operational cost increases at all. If these other operational costs are included and extrapolated for the Suppliers who stated significant impacts, this could add a further **£2.1m** in total.

It is proposed that the central estimate for the CBA annual increase in operational costs is **£6.2m**. However, if the other costs are included this total would increase to £8.3m.

## PSRG discussion

The PSRG supported the calculation of central estimate of operational costs of £6.2m based on the median costs given for the increase in agency costs of £38 per meter. The PSRG noted the wide differential in costs and agreed that the operational costs presented above are impacted by the relative size of a Supplier's portfolio.

They are also impacted by the starting point of level/type of service each supplier is currently operating at for those customers. For example some Suppliers will already be collecting HH data through approved agents and would not incur significant additional costs to settle HH. Some PSRG members felt that some of the costs given were based on the 'old mindset' of HH processes being mandatory (>100kW) and that by treating as Measurement Class E the costs would be less.

## 4.3 Distribution Business Costs

As noted in section 3.3 above, the Distribution Businesses who responded identified one-off costs in a range from £30k to £80k, and operational costs of £20k to £40k per annum. Taking the figures in the middle of these ranges and extrapolating to seven Distribution Business (DNO) companies suggests a total one-off cost of £385k, and annual costs of £210k per annum.

If we assume that costs for the five Independent distribution businesses (IDNOs) are comparable, the total Distribution Business cost (including both DNOs and IDNOs) would be £660k + £360k per annum.

## PSRG discussion

The PSRG agreed that the costs presented above were based on individual DUoS billing for these sites and that these costs would be reduced with a new HH DUoS Charging Regime based on aggregated data. However, a new aggregated data and charging approach needs to be worked up. This will be through the work on addressing the high HH DUoS charge regime barriers as discussed previously.

## 4.4 Risks and Issues

Risks and issues identified are:



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DUoS HH Charges: this is the biggest risk where the CDCM is not changed and the barrier of high HH DUoS charges is not removed or not resolved to appropriate timescales. Work is underway to address this (see section 3.3);

Interaction with the Smart Meter Implementation Programme (SMIP) roll out timescales might mean that industry infrastructure changes will be rolled up together;

There is a risk that under SMART the HH data will not be available to the market due to confidentiality issues relating to customer data driven by rulings of the European Parliament. The DCC may collect the HH data but it is only provided in aggregate for Settlement and Billing and DUOS charges;

Registration: Depending on the how a Supplier meets the mandated HH settlement of its customers by April 2014 a new bulk CoMC process may be required;

GSP Group Correction Factor may be applied to HH quantities: this issue is being separately considered by the PSRG;

Uptake of Feed in Tariffs (FiTs) and impact on settlement: this issue is being separately considered by the PSRG;

Interaction with SMART programme: ELEXON continues to monitor the smart programme developments and any interaction with work on Advanced metering and PCs 5-8;

Affect on profiling sample: this issue is being separately considered by the PSRG;

Alignment of Supplier settlement and billing? Do Suppliers need to align their billing and settlement functions?

DTN Costs: will there be an increase in DTN costs due to the HH meter volumes and file sending sent?

Data Volume: are there impacts due to increased volumes in data?

Issue of where a customer is settled HH in Measurement Class 'E' but has crossed the 100kW threshold and should be settled in Measurement Class 'C'. There are currently no requirements on suppliers to ensure that this happens or for this to be monitored say through PARMS serials;

Using the Profile Class 5-8 definition for the mandate. This needs to be looked at whether a different more robust definition is required, e.g. by maximum demand customers, type of electrical connection;

Interoperability: are there any concerns with regards to change of Supplier and the meter having to be replaced due to new agents not able to work with the existing meter;

Issues with energy resolution in data flows (D0275 and D0036) were raised as it may lead to volume errors; and

Impact on the obligations for the Carbon Reduction Commitment (CRC). A non domestic customer qualifies for mandatory full participation in the CRC if their organisation contains one or more sites with an electricity meter that is settled as HH. The CRC process is viewed by some as complex and with the introduction of further HH meters consideration will need to be given to impacts on customers and suppliers in fulfilling this obligation.



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## 5 Cost Benefit Analysis: Benefits

The benefits can be summarised as a benefit to settlement and other benefits which have been difficult to establish a monetary value against.

Benefit	Central CBA benefit (£m)
Annual settlement	£17m
Other	<b>Better risk management for Suppliers and potential less exposure to imbalance costs</b> <b>More accurate demand forecast</b> <b>More cost effective tariffs</b> <b>Reduced carbon emissions, peak load shifting demand side reduction</b>

### 5.1 Settlement Benefits

The following analysis has been undertaken to quantify the benefits to settlement of having more accurate meter reading data, i.e. through having HH data. Inherently settling on profiled meter advance must be less accurate than using the recorded half hourly meter data. Using data referenced by the PSRG paper on applying GSP Group Correction to HH settlement quantities ('Strawman Scaling Factors for GSP Group Correction'), the following settlement benefit in energy is:

1. Error in settlement due to NHH settlement is quantified at 9TWh per annum. This error is where profiling is putting the energy in the 'wrong' settlement period. The overall energy is still settled correctly (and not 'lost') but due to errors from the profiling model and construction of the profile it has been allocated to the wrong settlement period; and
2. Profile Classes 5-8 account for 10% of the NHH energy settled annually. Therefore the annual error due to PC5-8 is approximately 0.9TWh.

Therefore, there is 0.9TWh of energy out of 17.5TWh<sup>1</sup> of annual energy that will be correctly allocated to the right settlement period (5% of 17.5TWh) if PCs 5-8 is settled HH.

To determine a monetary benefit from this 0.9TWh of energy we have modelled a year (BSC Year 2009-10) to determine the difference between settling PCs 5-8 NHH and HH. The following steps have been taken:

1. Build a super profile of all customers in PCs 5-8;
2. Derive a random error element which gives a comparison of the true HH value (using the super profile as the estimate of the HH values) compared against a random error from this super profile for PCs 5-8 (see Figure 3 below);

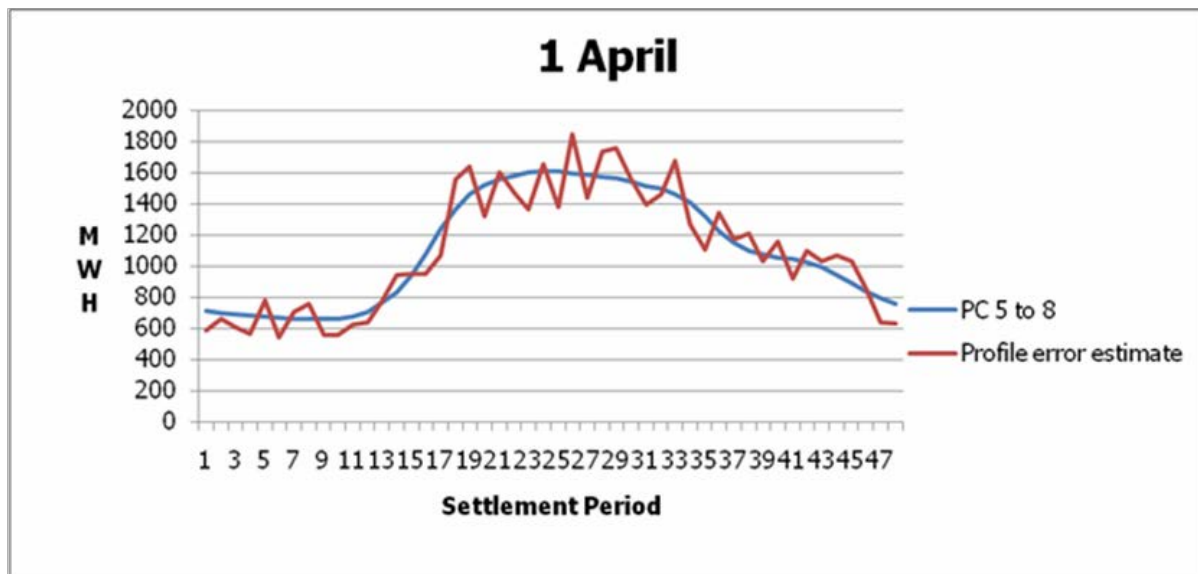
<sup>1</sup> Total NHH annual energy is 168 TWh, PCs 5-8 is 17.5 TWh, see Figure 2.



# Profiling & Settlement Review

3. Assign a percentage error range +/- between 1-20%, this gives a total annual error of approximately 0.9TWh (equivalent to 0.9TWh derived above from previous settlement analysis);
4. Where the profile error is above the 'true HH value' multiply it by the System Sell Price (as this is assumed to be spilling and party is long) and System Buy Price when lower; and
5. This gives an absolute error of £74m and taking the net value gives **£17m**.

**Figure 3. Comparison of HH PCs 5-8 super profile and associated random error in profiling**



Appendix 5 describes the analysis in detail.

## PSRG discussion

One member suggested utilising the GSPGCF as a tool for understanding where the greatest percentage of error is, i.e. high/low GSPGCF then a greater proportion of error is likely to be in that period. They felt that if GSPGCF is most accurate around peaks and less in the early/late morning periods and so profiling is more accurate around the peaks as it was felt this was the important part of the day to be correct. However, if the random profile allows an error in that period with the same probability in another period and with consequentially higher system prices the benefits/costs may well be overstated. It should be noted that the peaks, however, are driven by the domestic load and not profile classes 5 to 8 which if anything will be in starting to decrease in load around the peak. Hence, it is hard to prove the assertion that profiling is inherently more accurate at the peak for these profile classes.

Another member felt that the benefits are -potential benefits|| as this depends on Suppliers assessment of the value of risk that is removed by having much more accurate allocation of energy costs to the correct Supplier at the correct time period.

## 5.2 Other benefits

Based on the responses to the CBA impact Assessment, the following benefits have been identified. The benefits are for Suppliers, Distribution Businesses and their customers:



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1. **Demand Forecasting:** With increased availability of HH data for these sites, demand forecasting should be more accurate as based on more detailed and timely meter data;
2. **Product Innovation:** Parties should be able to construct more cost effective tariffs with the increased resolution in metered data from HH. Also the potential availability of new services to customers, such as energy management products;
3. **Customer Invoicing and more accurate billing:** Benefits can be achieved with more accurate and timely bills for the customer as the costs can be based on actual consumption. However, the majority of this benefit will be in having an Advanced meter and there would be smaller additional benefit on settling HH over NHH. The potential for lower costs for consumers as they are enabled to reduce or change their energy consumption. The reductions may be due to lower DUoS or TNUoS charges due to changes in customer behaviour and shifting load away from peak periods. Also customers with flat load profiles (when compared with a settlement profile) should be able to reduce their costs;
4. **Reduced Agency Costs:** there is the potential for economies of scale and reduction in HH agency costs as the number of HH settled meters changes by 150% (from 115,000 to 279,000);
5. **Settlement Cashflows:** Parties should be able to plan their settlement cashflows more accurately and thereby reduce processing and financing costs. There is also a potential reduction in Supplier internal costs by the fact that 99% is settled on actual data by R1;
6. **More accurate DUoS billing and better reporting of losses:** Due to the availability and timeliness of the HH data; and
7. **Better system planning and less requirements for reinforcement:** HH data would allow for more timely planning of system development, reduced need for reinforcement, more cost reflective reactive or capacity charging;
8. **Other benefits:** Reduced carbon emissions resulting from behavioural change of customers and peak load shifting. Peak load shifting may also lead to security of supply benefits.





# Profiling & Settlement Review

## 6 PSRG views on CBA results

The PSRG agreed that it was of paramount importance to remove the barriers of high HH DUoS Charges. Efforts should be focussed on ensuring this issue is addressed no later than April 2012. The PSRG felt that HH settlement could not be mandated unless the market design issue of HH DUoS was resolved (or at least with an implementation date for resolution). The PSRG agreed that 'time was of the essence' and that as much pressure as possible should be applied from both industry and regulatory bodies to change the Common Distribution Charging Methodology (CDCM) to remove this barrier.

The PSRG noted the second barrier to HH settlement was agency costs. Some felt that by mandating HH settlement this would reduce these agency costs. Others felt it was a 'chicken and egg' situation and that HH settlement could not be mandated until these costs were reduced. However, others believed until HH settlement was mandated then agency costs would not be driven down. This was a more commercial barrier where there is currently no incentive to remove it unless there was a mandate. One needed to create the environment where costs are incentivised to reduce.

Some felt that HH settlement should be mandated when drivers in the market are there and the significant barriers are reduced or there could be price disturbance for the customer if costs were passed on directly.

The PSRG felt that foremost the benefit of HH settlement was under the BSC and the customer would be given the choice by the Supplier on HH or NHH tariffs. Some noted that there would be potential benefits if both settlement and billing were aligned. It would be foolish to mandate if customers saw a disturbance in its costs, due to HH DUoS or passed through agency costs. The Group recognised the importance of getting HH data to be able to fully understand the impacts and benefits of the rollout of Advanced meters and to learn lessons for the smart programme.

Ofgem noted that this CBA work by ELEXON provided insight into the future of settlement and was a useful piece of work especially in the context of smart. The PSRG believed that there was still a window of opportunity to learn from the work of this CBA and HH settlement for PCs 5-8 so this could be applied to smart and PCs 1-4. There was risk of missing the lessons that could be learnt and greatly reducing the settlement timescales for PCs 1-4 and improving the processes under the smart governance.

**In summary, the PSRG agreed that, based on the cost and benefits outlined in the CBA, HH settlement should be mandated. However, some members were concerned about the costs involved and felt that until industry addressed these costs, it should not be mandated yet.**





# Profiling & Settlement Review

## 7 CBA Conclusions

The conclusions of the Cost Benefit analysis study of mandating HH Settlement by April 2014 are:

1. Central cost estimates and potential benefits over a 5 year period:
  - (a) Costs: £35.1m
  - (b) Benefits: £85.0m
  - (c) These costs and benefits are based on the issue of HH DUoS charges having been resolved;
2. There is support from most parties for half hourly settlement at some time in the future because:
  - (a) Better risk management for Suppliers and potential less exposure to imbalance costs;
  - (b) More accurate demand forecasting;
  - (c) More cost effective tariffs with more accurate billing, settlement and DUoS charges;
  - (d) Reduced carbon emissions, peak load shifting demand side reduction. It allows for the customer to undertake better load shifting and energy savings and the Supplier to provide better time of use tariffs and customer billing;
  - (e) It is more efficient as HH settlement uses the data that is recorded by the meter, instead of load profiling and non half hourly estimates. This leads to better Distribution Business system planning and more cost effective reinforcements;
3. The PSRG believe, based on the assumptions of the analysis, there is a clear cost benefit, but note that there are significant costs at present for:
  - (a) Supplier agency costs for HH settled customers as industry mindset is still that half hourly equates to large customers;
  - (b) The current half hourly DUoS charging regime which disincentivises HH billing and settlement;
4. **HH settlement should be mandated for Profile Class 5-8 customers:**
  - (a) **By mandating HH settlement and increasing the HH market size significantly, supplier agency costs (costs to serve) will reduce further;**
  - (b) **It will help to identify issues for the settlement of smart meters as it can be seen as 'trial for smart' and thereby through appropriate solutions make the smart 'meter-to-bank' process more efficient, effective and economic for 29m meters; and**
  - (c) **However, it is recognised that the issue of HH DUoS needs to be resolved. Work is underway under the Distribution Business Charging Methodology Forum to change the current HH DUoS charging methodology. The aim is that a more cost reflective charging methodology for HH customers will be in place by April 2012.**



# Profiling & Settlement Review

## 8 CBA - Transitional Considerations

There are a number of transitional considerations that will need to be addressed if customers on Profile Classes 5 to 8 were to be settled half-hourly by the 6 April 2014. These include:

### 8.1 Profiling

There is a need to consider appropriateness of the existing profiles as increasing numbers of customers are moved to half-hourly Settlement. If Profile Classes 5 to 8 are discontinued then residual customers will require a 'Change of Profile Class' probably to Profile Classes 3 or 4. Both the impacts and timescales of such an approach will require further consideration. It is likely that some customers that cannot be moved to within the defined timescales due to half-hourly due to meter replacement or other constraints.

Another consideration would be of what to do with new customers that would meet the old Profile Class 5 to 8 criteria as defined in BSCP516 'Allocation of Profile Classes & SSCS for Non-Half Hourly SVA Metering Systems registered in SMRS'. Should any such customers automatically be fitted with an Advanced Meter and settled half-hourly. If so there would need to be some clearly defined process for such new connections.

There is also a requirement in 3.2 of BSCP516 that requires the load factors for customers in Profile Classes 5 to 8 to be re-calculated annually. These customers could be moved to HH between the re-calculation and the change of profile class process causing registration issues. An interim solution may be required to avoid contradictory registration flows being sent as customers have a CoMC.

### 8.2 GSP Group Correction

It is likely that group correction factors may increase as customers are transitioned to half-hourly Settlement. This is due to the method of calculation rather than increased error. In fact the corrected volume is likely to fall and this may compensate to some degree in the change in level of GSP Group CF. However, considerations and timescales relating to the application of GSP group correction to Half-hourly data will need to be given.

### 8.3 NHH Performance

The transitional impact on NHH performance for Suppliers should be considered as CoMC for customers with Advanced Meters is likely to give step fall in 97% (SP08a) Serial. This is due to the fact that these customers are more likely to be providing actual meter reading to NHH Settlement. Transition to half-hourly Settlement should not be seen to penalise Suppliers through Supplier charges for underperformance of their remaining NHH portfolios.



# Profiling & Settlement Review

## 9 Issues and Lessons for Profile Classes 1 to 4

A number of responses expressed concern about the volume of data that systems would have to handle if mandatory HH settlement were extended beyond Profile Classes 5-8:

Some of the Supplier responses indicated that HH settlement for PC1-4 would represent a large increase in the volumes of data exchanged and stored, which would be potentially beyond current systems, and that therefore some form of data aggregation might need to be considered;

One of the responses also pointed out that the differential in data volumes between HH and NHH is greater for PC1-4 than PC5-8, because most PC1-4 meters are currently read quarterly; and

These concerns were echoed in one of the Supplier Agent responses, which commented that there would be no major problems scaling up the HHDC/DA process for PC3-4, but that PC1-2 would be a major step change, and pose scalability challenges for existing systems and processes.

One of the responses suggested that Suppliers would want to understand the issues created by HH settlement of Profile Classes 5-8 before embarking on HH settlement of Profile Classes 1-4. This would include issues around how best to communicate with customers, and manage any discrepancy between billing and settlement.

Some of the responses identified specific technical issues that would need to be addressed prior to introducing more widespread HH settlement in Profile Classes 1-4:

Consideration would need to be given to the appropriate Code of Practice (CoP). It may be appropriate to introduce a new HH CoP for this sector of the market;

To avoid rounding errors in settlement and billing, the number of decimal places allowed in industry data flows (such as the D0275 and D0036) may have to be increased to cater for the low kWh values that small customers will use in a half hour; and

One of the Supplier Agent responses commented that the target of 99% for R1 (proposed for Profile Classes 5-8) would be disproportionately expensive for Profile Classes 1-4 (and that the target should remain 99% at RF as currently). This could require a separate Measurement Class for Half Hourly consumption in Profile Classes 1-4.

Many of the Distribution Business responses were open to the idea that new sub-100kW HH DUoS tariffs introduced for PCs 5-8 could also be applied to PCs 1-4.

Finally, some of the responses noted that the future data collection requirements for Profile Classes 1-4 are currently unclear, as the Smart Metering Implementation Programme (SMIP) is still considering the extent to which the DCC should take on data collection and registration functions. However, as long as the design of the DCC processes takes into account the possibility of HH settlement, one respondent did not believe that there need be technical barriers to settling all customers in this way (although they suggested that the commercial drivers for doing so were less clear at this stage).



# Profiling & Settlement Review

## 10 Glossary

### 100kW market

Those Metering Systems that are 100kW Metering Systems (as defined in the BSC) and must therefore be registered to Measurement Class C (HH metered in 100kW Premises) and settled through HH processes.

### 100kW Metering System

A 100kW Metering System is:

- (i) any Metering System where the average of the maximum monthly electrical demands in the three months of highest maximum demand in:
  - (a) the previous twelve months; or
  - (b) the period since the most recent Significant Change of Demand (whichever is shorter) exceeds 100kW; or
- (ii) any Metering System where the Profile of a Customer's electrical demand implies an average of the maximum monthly electrical demands in the three months of highest maximum demand either in:
  - (a) the previous twelve months; or
  - (b) the period since the most recent Significant Change of Demand (whichever is shorter) exceeding 100kW; or
- (iii) any CVA Metering Systems; or
- (iv) an Unmetered Supply where the relevant Distribution System Operator has agreed that the maximum demand is above 100kW; or
- (v) any Metering System which is for the time being declared by a Supplier in accordance with the relevant BSC Procedure to have a maximum demand in excess of 100kW.

### Advanced meter

As defined in the standard conditions of the gas and electricity supply licence:

12.19 For the purposes of this condition, an advanced meter is an Electricity Meter that, either on its own or with an ancillary device, and in compliance with the requirements of any relevant Industry Code, is able:

- (a) to provide measured electricity consumption data for multiple time periods, and at least half-hourly; and
- (b) to provide the licensee with remote access to such data.'

### Consumption Component Class (CCC)

There are 35 CCCs and each CCC represents a unique combination of attributes including distinguishing between NHH, HH, import, export, metered/unmetered, actuals/estimates, EAC/AAs and line losses.



# Profiling & Settlement Review

## Elective HH or <100kW market

Those Metering Systems that are not 100kW Metering Systems (as defined in the BSC), but which the Supplier voluntarily chooses to settle through HH processes. Note that a customer in the Elective HH Market might be registered under Measurement Class C (HH metered in 100kW Premises) or E (HH metered not 100kW Premises). This is because the BSC does not force Suppliers to use E for customers below 100kW.

## Measurement Class C

Is the identifier used to signify a metering system that is HH metered for a 100kW Premise.

## Measurement Class E

Is the identifier used to signify a metering system that is HH metered for < 100kW Premise.

## MPAN

Meter Point Administration Number (MPAN) identifies the Metering System associated with any point of access to the transmission system or any distribution system.

## Non Half-hourly meter

Means a Supplier Volume Allocation (SVA) meter, which provides measurements other than on a half-hourly basis for Settlement purposes.

## Profile Class 1 - Domestic Unrestricted Customers

Customers at a domestic premises, as defined in the terms of the Supply licence, that are on an unrestricted tariff.

## Profile Class 2 - Domestic Economy 7 Customers:

Customers at a domestic premises, as defined in the terms of the Supply licence, that are on a Domestic Economy 7 or similar tariff that have a metering system that is capable of switching load, e.g. Storage and Immersion Heating.

## Profile Class 3 - Non-Domestic Unrestricted Customers

Customers at non-domestic premises, as defined in the terms of the Supply licence, which are on an unrestricted tariff.

## Profile Class 4 - Non-Domestic Economy 7 Customers

Customers at a non-domestic premises, as defined in the terms of the Supply licence, that are on a Non-Domestic Economy 7 or similar tariff that have a metering system that is capable of switching load, e.g. Storage and Immersion Heating.



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## Profile Class 5 - Non-Domestic Maximum Demand Customers with a Peak Load Factor between 0-20%

Non-Domestic customers, as defined in the terms of the Supply licence, that have a metering system that records maximum demand and have a calculated peak load factor of between 0-20% based on the annual consumption and annual peak demand that are recorded on the metering system.

## Profile Class 6 - Non-Domestic Maximum Demand Customers with a Peak Load Factor between 20-30%

Non-Domestic customers, as defined in the terms of the Supply licence, that have a metering system that records maximum demand and have a calculated peak load factor of between 20-30% based on the annual consumption and annual peak demand that are recorded on the metering system.

## Profile Class 7 - Non-Domestic Maximum Demand Customers with a Peak Load Factor between 30-40%

Non-Domestic customers, as defined in the terms of the Supply licence, that have a metering system that records maximum demand and have a calculated peak load factor of between 30-40% based on the annual consumption and annual peak demand that are recorded on the metering system.

## Profile Class 8 - Non-Domestic Maximum Demand Customers with a Peak Load Factor of over 40%

Non-Domestic customers, as defined in the terms of the Supply licence, that have a metering system that records maximum demand and have a calculated peak load factor of over 40% based on the annual consumption and annual peak demand that are recorded on the metering system.

## Smart Meter

A meter of the type that the Government proposes to mandate for all domestic customers and smaller non domestic customers by 2020 (except for Profile Class 3-4 customers with an Advanced Meter already installed). Although the technical specifications for such meters are still to be finalised, the Government has indicated that they will allow a Supplier to take remote readings/information and provide a customer with access to information, broken down into multiple time periods, based upon data from those readings and support a range of time of use tariffs.

We anticipate that smart meters will be required to be remotely configurable, and so require two-way communications to and from the meter, have import/export capability, have capacity to communicate with a micro-generator (and store generation information for billing), have load management capability, provide real-time information to an in-home display and a remote switching capacity for electricity.



# Profiling & Settlement Review

## 11 References

Reference 1: ELEXON Profiling and Settlement Review Supplier Consultation see link:

[http://www.elexon.co.uk/documents/consultations/elexon\\_profiling\\_and\\_settlement\\_review\\_supplier/elexon\\_profiling\\_and\\_settlement\\_review\\_supplier\\_consultation\\_1.0.zip](http://www.elexon.co.uk/documents/consultations/elexon_profiling_and_settlement_review_supplier/elexon_profiling_and_settlement_review_supplier_consultation_1.0.zip)





# Profiling & Settlement Review

## 12 Appendices

### Appendix 1. Cost Benefit Analysis Requirements and Assumptions

#### A1.1 CBA Scenario

To understand the advantages and disadvantages of requiring Half Hourly Settlement for sites with mandatory Advanced metering (i.e. for customers in Profile Classes 5 to 8) the following strawman scenario was developed.

No.	Requirement	Requirement Detail
1	All customers in Profile Classes 5-8 settled HH by 06 April 2014	With effect from 6 April 2014, the BSC would prohibit the use of Non Half Hourly Settlement for customers in Profile Class 5 to 8 with half hourly capable metering installed. This means Profile Classes 5 to 8 would fall into disuse <sup>2</sup> .
2	Transition to HH: Supplier choice	It would be left to individual Suppliers to choose how they phase in the new requirement before 6 April 2014. For example, some Suppliers might choose to switch customers to Half Hourly Settlement as soon as they install Advanced metering; others might choose to perform a bulk Change of Measurement Class before 6 April 2014.
3	Registered as Measurement Class E only	There would also be a new BSC requirement to register below-100kW Half Hourly capable Metering Systems in Measurement Class 'E', leaving Measurement Class 'C' for 100kW customers only. This is a change from current practice, in which Suppliers are free to choose either Measurement Classes 'C' or 'E' for below-100kW Half Hourly customers.
4	99% actual HH data at R1 (SP08c)	The existing Performance Serial SP08c would be amended. This would require Suppliers to achieve 99% of energy settled on actual data by the First Reconciliation (R1) for Measurement Class 'E' (instead of currently being 99% at Final Reconciliation (RF)).
5	Profiles 5-8 discontinued	The Profile Administrator would discontinue load research for Profile Classes 5 to 8. The regression equations and other profiling deliverables for BSC Year 2014/15 would therefore be 'frozen' and apply to all subsequent years (for the few cases which still need them e.g. Unmetered Supplies and estimation of missing data by Half Hourly Data Collectors).
6	CoP5 and CoP10: no change	No changes would be made to the metering standards for Advanced metering (as specified in CoP5 and CoP10).

<sup>2</sup> The only possible exceptions are those customers where the Supplier -has been unable to install or arrange for the installation of appropriate metering at the relevant premises in question despite taking all reasonable steps to do so, and for the settlement of Unmetered Supplies.



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No.	Requirement	Requirement Detail
7	No Technical Assurance of HH Meters in Measurement Class 'E': no change	Metering Systems in Measurement Class 'E' would not be subject to the Technical Assurance process. This process is defined in BSCP27 ('Technical Assurance of Half Hourly Metering Systems for Settlement Purposes') and is currently not applied to Measurement Class 'E'.
8	Measurement Class E Site visits: no change	Metering Systems in Measurement Class 'E' would still require a site visit every two years (to check the state of the Metering Equipment).
9	HH MOs, HH DCs, HHDAs: no change to requirements	Requirements on Half Hourly Data Collectors and Half Hourly Meter Operator Agents would remain unchanged, and would apply to Measurement Class 'E' as well as Measurement Class 'C'. For example, Meter Operator Agents would be required to investigate Metering System faults within 5 Working Days, in accordance with the existing requirements in section 3.4.3 of BSCP502.
10	Change of Measurement Class process: no change	The current Change of Measurement Class (CoMC) process is described in BSCP502 and BSCP514. There will be no change to these requirements. This process currently assumes there is a physical change of meter, even though this may not be the case under the strawman scenario. However, no changes to this approach are proposed and no new bulk CoMC process is suggested.
11	SVA specified charge: no over-recovery	Suppliers would continue to be charged a monthly SVA Specified Charge for each Half Hourly Metering System (in accordance with section 4 of Annex D-3 of the BSC); but the level of the charge would be reduced as the number of Half Hourly Metering Systems increased to avoid any over-recovery <sup>3</sup> .
12	DUoS and TNUoS charges: no change	The current methodologies for calculating Distribution Use of System (DUoS) and Transmission Network Use of System (TNUoS) would remain unchanged (which means that charges for Measurement Classes 'C' and 'E' would be calculated on the same basis).

## A1.2 Rationale for the CBA strawman requirements.

No.	Requirement	Rationale
1	All customers in Profile Classes 5-8 settled HH by 06 April 2014	We believe that using the HH meter data available from the Advanced meter will enable a Supplier's settlement bills to accurately reflect the customers true consumption. HH settlement is more accurate and will avoid the smearing effects of profiling NHH meter data. The date of 06 April 2014 aligns with the date mandated for the completion of the roll out Advanced metering for customers in Profile Classes 5-8.

<sup>3</sup> The basis for the recovery of HH settlement charges will be reviewed as part of CBA work.



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No.	Requirement	Rationale
2	Transition to HH: Supplier choice	This gives Suppliers the flexibility to choose on how to manage their portfolio and the switch to HH settlement. There may be a risk that all Suppliers choose to do a bulk change of Measurement Class and agent on the final days leading up to 06 April 2014.
3	Registered as Measurement Class E only	Measurement Class 'E' has been set up for the <100kW market. By mandating that Suppliers register their Metering Systems under 'E', it means that costs and benefits can be directly identified. It also allows for future changes such as to settlement to apply GSP Group Correction Factor to these metering systems and for HH DUoS charges to be appropriately targeted. It also provides extra information to identify and understand the implications for a wider HH market (e.g. PCs 1-4).
4	99% actual HH data at R1 (SP08c)	Whilst this is more onerous than the current SP08c requirements of 99% at RF, the current performance achieved by parties shows that HH metering systems have >99% of actual data at SF. Setting this measure at R1 also allows time for the resolution of meter data issues.
5	Profiles 5-8 discontinued	With all PCs5-8 customers being settled HH there is no need for load research for these profiles in future, which will reduce costs.
6	CoP5 and CoP10: no change	We believe that these current meter standards are enough for the HH proposal. There are existing CoP5 and CoP10 approved meters and changes introduced would have costs and time implications.
7	No Technical Assurance of HH Meters in Measurement Class 'E': no change	Currently, there are no Technical Assurance visits for Metering Systems in Measurement Class 'E'. This is because of the energy volume associated with each Metering System and the low numbers in this market. For these reasons, we believe no change is required at this time.
8	Measurement Class E Site visits: no change	Site visits help Suppliers meet their BSC obligations. We believe the current BSC requirements are sufficient. Any change would have significant implications and costs. The aim of the CBA is to investigate a 'least change case'.
9	HH MOs, HH DCs, HHDAs: no change to requirements	We believe the current BSC requirements for HH agent processes are sufficient. Any change would have significant implications and costs. The aim of the CBA is to investigate a 'least change case'.
10	Change of Measurement Class process: no change	We believe the current BSC requirements are sufficient. Any change would have significant implications and costs. The aim of the CBA is to investigate a 'least change case'.
11	SVA specified charge: no over-recovery	The current principle is that HH SVA costs are recovered on a per Meter basis. A review of this is being undertaken separately to the CBA scenario. Currently, the SVA specified charge is 70p a Meter per



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No.	Requirement	Rationale
		month. Based on all PCs 5-8 Metering Systems being settled HH (and assuming current SVA costs remain the same), this would come down to approx 30p.
12	DUoS and TNUoS charges: no change	For the purpose of the CBA, and to allow parties to respond meaningfully, the charging requirements have been kept the same. However, we recognise that issues exist in the HH DUoS charging regime and we are raising these separately with Distribution Businesses (e.g. though the DCMF, DCUSA Panel).

We refer to the above requirements as our 'strawman' scenario, because they were intended as a clear basis for the CBA and later discussions. They were not recommendations on the best way to introduce the new obligation. For example, the Profiling and Settlement Review Group (and many of respondents to the consultation) believe that it may not be appropriate to use the same DUoS and TNUoS charging structures for small Half Hourly customers (Measurement Class 'E') as larger Half Hourly customers (Measurement Class 'C'), and the DUoS charging methodologies need reviewing. The strawman scenario assumed keeping the CBA as simple as possible and further investigate the barriers to HH settlement.

The CBA will compares the requirements in the 'strawman' scenario (in which Profile Classes 5 to 8 are settled Half Hourly) with a 'base case' scenario (in which Profile Classes 5 to 8 continue to be settled Non Half Hourly). The base case scenario below clearly sets out the baseline for comparison with the CBA strawman scenario.

To undertake the CBA, we have compared the strawman scenario requirements with a base case scenario. All parties were asked to use these base case requirements when identifying incremental costs and impacts and any relevant issues.

## A1.3 Base case requirements: Rationale

No.	Requirement	Requirement Detail
A.	All PC 5-8 customers settled NHH	We assume all customers fitted with Advanced metering under the licence obligation will continue to be settled Non Half Hourly. Suppliers will still be able to settle such customers Half Hourly, but the number choosing to do so will be sufficiently small that we assume that they are all settled NHH for the purposes of the CBA. Currently approx. 2000 meters are registered as Measurement Class 'E'.
B.	Measurement Class 'C' or 'E': Supplier choice	In those few cases where Suppliers do opt for Half Hourly settlement, they will retain the right to choose whether to register the Metering System under Measurement Classes 'E' or 'C'.
C.	PARMS Serial (SP08c): No change	The Performance Serial for Measurement Class 'E' will remain unchanged i.e. 99% of energy settled on actual data by Final Reconciliation (RF).



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No.	Requirement	Requirement Detail
D.	Baseline requirements for NHH and HH: No change	No changes to BSC Procedures or Codes of Practice.

## A1.4 Impact Assessment assumptions:

No.	Assumption
1	Volumes:  Profile Classes 5-8: 164,000 meters and 18TWh of annual energy  HH market: 115,000 meters and 154 TWh of annual energy (this includes both import and export)
2	The Advanced meter will be either a CoP 5 or CoP10 meter (see definition in glossary)
3	All Advanced meters will be installed by 06 April 2014



# Profiling & Settlement Review

## Appendix 2. BSC impacts assessment detail

The impacts on the BSC and ELEXON would depend on the defined solution. However, there is a likely impact to the BSC Audit, Technical Assurance of Metering, SVA Qualification and Profile Administrator and profiling processes and possibly the Supplier Volume Allocation Agent (SVAA).

### A2.1 Performance and Risk

There may be a requirement for new or amended Settlement Risk(s), new or amended PARMS serials, and amendment to the Settlement Risk Reporting Tool (SSRT), its outputs and the Risk Evaluation Register (RER).

Impact on Customer Services' systems or processes would be via the Risk Evaluation Register (RER). There may be HH and/or NHH risks that change in impact/probability score due to the migration of 164,000 sites from PC5-8 to MC -E||, against a current MC E population of less than 3,000. This would be best accounted for within the review of the RER for year 2013/2014. The RER review for that year would start early in 2012. As the RER review is done every year, taking into account impacts from this change would not entail significant additional effort except the analysis required to identify changes to impact/probability scores.

### 99% actual HH data at R1 (SP08c)

There would be a need to measure the new standard in PARMS. This will require an update to the PARMS system managed by Logica. There would also be a need to ensure that Suppliers have been fully informed of the changes and the impact on Supplier Charges. There may be some change required to BSCP533 'PARMS DATA PROVISION, REPORTING AND PUBLICATION OF PEER COMPARISON DATA' and its appendices.

### A2.2 Technical Assurance (TA) Checks

The 'Strawman' defined that no TA checks for measurement class 'E' Customers. However, the Performance Assurance Board (PAB) and Supplier Volume Allocation Group (SVG) would need to consider whether the TAA should audit the Metering Systems given the change in volume. It may be that their decision is to only audit mandatory 100kW sites. Either way, this would require amendments to the BSCP27 and Section L.

Currently the Technical Assurance Metering (TAM) process looks at MC 'C' meters, the only change to the assurance process would be if MC 'E' meters became involved in this process and indicative costs have already been provided.

Contractually there may be an impact on the Technical Assurance Agent (TAA) agreement, by the move to HH metering systems and the technical assurance audit. The Operations (Contract) Manager for this service would need to advise on any impacts to the service (requirement 7).

### A2.3 Qualification

The SVA Qualification process may see changes to the requirements which will need to be noted within the Self Assessment Document (SAD) and Guidance Notes/Storyboards may need to be updated, as well a potential increase in Re-Qualification and Qualification applications.

### A2.4 PrA and Profiling Processes





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ELEXON are responsible for managing the PrA contract. The PrA would need to Impact Assess any change. ELEXON would need to ensure PrA process documentation was updated to reflect the new arrangements as well as update our PrA Contract, Service Description, BSCP510 'The Provision Of Sampling Data To The Profile Administrator' and BSCP516 'Allocation Of Profile Classes & SSCS For Non-Half Hourly SVA Metering Systems Registered In SMRS' and Service Management Documentation.

There is an impact on the Profile Administration Contract(s) recently re- procured, which will still be in force in 2014. There will be a Contract/Relationship Management impact and an impact on the service procured (e.g. removal of PC5-8 from the services thereby impacting the volume of work required and therefore the price paid).

## Data Gathering and Sample Management

There will be an impact on:

- Demand Lead Costs where the Service Provider charges for the installation, maintenance and removal of assets as a result of the reduction in the number of assets Sample Participants/Samples in the Sample pool.

- Ongoing Costs for the annual maintenance and associated visits, and the annual half hourly data collection and validation, whereby both of these will be effected by the removal of PC5-8 from the sample pool.

In both instances the volumes would be reduced and therefore the cost of the service/volume of work required to deliver the service would be reduced.

It is not clear if site visits would still be required on PC5-8 meters or not, therefore it is unclear if there would still be a requirement on the Supplier to undertake any works in relation to PC5-8 under the service provision.

## Data Analysis

There will be an impact in the requirements for the Data Analysis to undertake analysis work on PC5-8 each year, the removal of these profile classes would reduce the volume of work required and therefore reduce the cost of the service. This may impact the attractiveness of the service/de-value it sufficiently that the service provider would no longer be interested in undertaking the work (this would need to be quantified).

BSCP520 'Unmetered Supplies Registered in SMRS' would also require review since continuous NHH suppliers are settled using Profile Class 8.

## A2.5 Supplier Volume Allocation Agent (SVAA)

There may be an impact on the BSC Services Agreement (SVA specific). The Operations (Contract) Manager for this service would need to advise on any impacts to the service.

## A2.6 GSP Group Correction Factors (GSPGCF)

There will be additional work in managing the impacts on the monitoring of changes to GSPGCF and GSPGCF application.





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## Appendix 3. Impacts on GSP Group Correction Factors and Corrected Volume

It should be noted that if 164,000 Profile Class 5 to 8 customers are moved to HH, and the existing GSP Group Correction Factor (GSPGCF) methodology remains unchanged, that GSPGCFs may increase in range due to the method of calculation. However, it should also be noted that the 'corrected volumes' are likely to fall due to the accurate Settlement of the customers formerly on Profile Classes 5 to 8. 'corrected volume' is the difference between the GSP Group Take and the sum of the HH aggregated volume and the NHH Profiled volume.

This effect can be easily demonstrated using some 'round' figures to demonstrate the effect. If the following assumptions are taken for 1 Settlement Period in a GSP \_X:

GSP Group Take = 2000 MWh  
HH Aggregated volume = 950 MWh  
NHH Profiled volume = 1000 MWh  
Profile Class 5-8 volume = 100 MWh.

$\text{NHH Take} = \text{GSP Group Take} - \text{HH Aggregated volume} = 2000 - 950 = 1050\text{MWh}$

### Before moving PC 5-8 volume to HH

Before PC 5-8 customers are settled HH, the GSPGCF calculation is:

$\text{GSPGCF}_{\text{old}} = \text{NHH Take} / \text{NHH Profiled volume} = 1050 / 1000 = \mathbf{1.05}$

The 'corrected volume' is 50 MWh.

### After moving PC 5-8 volume to HH

If it is assumed there is no Profile Error volume for Profile Classes 5-8 then the 'corrected volume' stays at 50 MWh. After moving the PC 5-8 volume to HH, GSP Group Correction Factor will be:

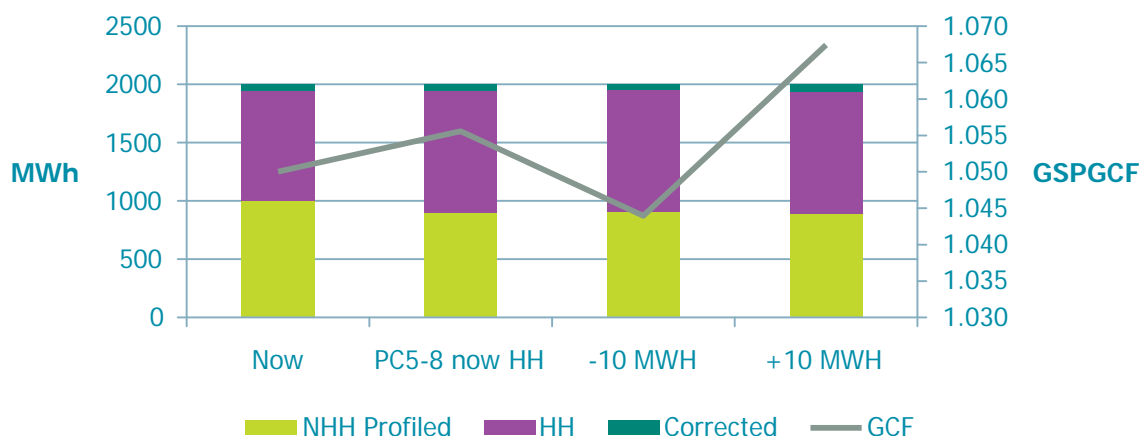
$\text{GSPGCF}_{\text{new}} = \text{NHH Take} / \text{Profiled Take} = 950 / 900 = \mathbf{1.056}$

The correction factor has increased by 0.006 and the corrected volume has remained unchanged. See Figure 3 below.



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**Figure3. Impact on GSP Group correction PC 5-8 settled HH (NHH profiled volume change)**



Running a simulation (over 10,000 runs) to model the likely effects on GSPGCF suggest changes in most instances will be modest. These GSPGCF changes could be between -0.04 to 0.03 (5<sup>th</sup> and 95<sup>th</sup> percentile, see figure 4 below).

Most GSP GCF volume errors are associated with Profile Classes 2 and 4 and changes in the corrected volume are likely to be modest when moving Profile Class 5 to 8 customers from NHH to HH.

## Other scenarios

If it was assumed that some of the error in the corrected volume was due to PC 5-8 then:

Corrected volume decreased by 10MWh, as NHH Profile Volume increased by 10MWh.

$$\text{GSPGCF}_{\text{newd}} = \text{NHH Take} / \text{Profiled Take} = 940/900 = \mathbf{1.044}$$

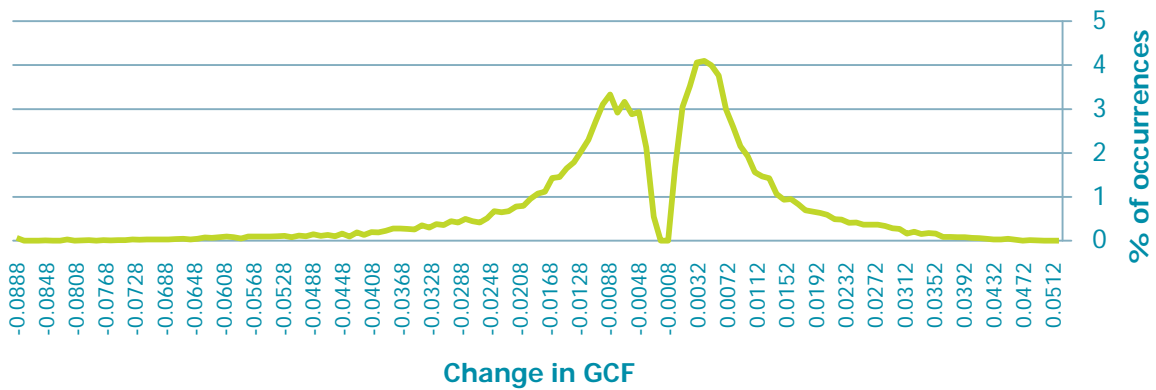
Or corrected volume increased by 10MWh, as NHH Profile Volume decreased by 10MWh.

$$\text{GSPGCF}_{\text{newu}} = \text{NHH Take} / \text{Profiled Take} = 960/900 = \mathbf{1.067}$$



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**Figure 4. Changes in GSPGCF if PC5-8 customers settled HH  
(no change in corrected volume)**





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## Appendix 4. Impact on the SVA specified charge

The costs recovery of the SVA costs is described in Section D of the BSC (Annex D-3, 4.1). Currently these SVA costs are split 50:50 between Generators and Suppliers. The Suppliers' 50% is further allocated between HH and NHH Suppliers as follows:

- SVA Specified Charge – currently £0.70 per HH MSID per month. With approximately 115,000 HH MSIDs this recovers approximately £0.96m a year; and
- The rest of the Suppliers' half of SVA costs is allocated using Non Half Hourly MWh metered energy.

The principles for setting the SVA Specified charge are (to be discussed by the Panel):

SVA Costs are shared between Generators and Suppliers, 50:50;

the 50% Supplier share of SVA costs are then split between HH and NHH Suppliers;

NHH Suppliers pay for the costs incurred by NHH SVA processes which are:

- Profiling Agent costs;
- Teleswitch Agent costs;
- EAC/AA and NHHDA software maintenance and support costs; and
- NHH elements of Operational audit;

HH Suppliers pay for the costs incurred by HH SVA processes which are:

- HH elements of Operational audit; and
- SVA element of Technical Assurance Agent costs;

NHH and HH Suppliers share the rest of the SVA costs according to HH/NHH energy volume ratio, approx. 47:53 (July 2010).

The SVA Specified Charge is currently being reviewed with the aim to present the findings to the January 2010 Panel meeting. This will coincide with the budget figures for the BSC Year commencing on 01 April 2011. Based on current budgetary estimates for the next year, the SVA Specified Charge would stay about £0.70 per MSID per month (114,500 MSIDs). If all meters in Profile Classes 5-8 were settled HH this would add a further 164,000 MSIDs and change the % energy split for HH/NHH to 53:47. Therefore the SVA Specified Charge would reduce to about £0.32 per MSID per month.



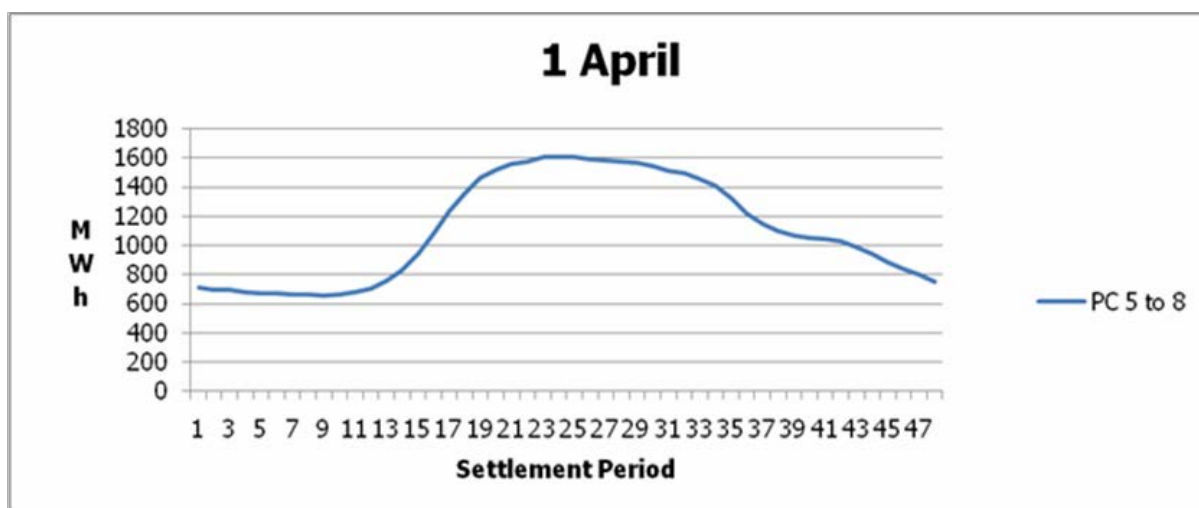
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## Appendix 5. Settlement benefits calculation

We know from taking a snapshot of the Profile Classes held at Non-Half Hourly Data Aggregators that the number of MPANs and annual energy for Profile Classes 5-8 are as follows:

Profile Class	MSIDs	Energy (MWh)
5	37,198	2,721,572.46
6	53,465	5,393,304
7	25,751	3,124,025.21
8	47,868	6,363,835.84

Using this information and the half-hourly profile data we can build a 'super profile' to represent the total energy for Profile Classes 5 to 8. For one day it looks like this:

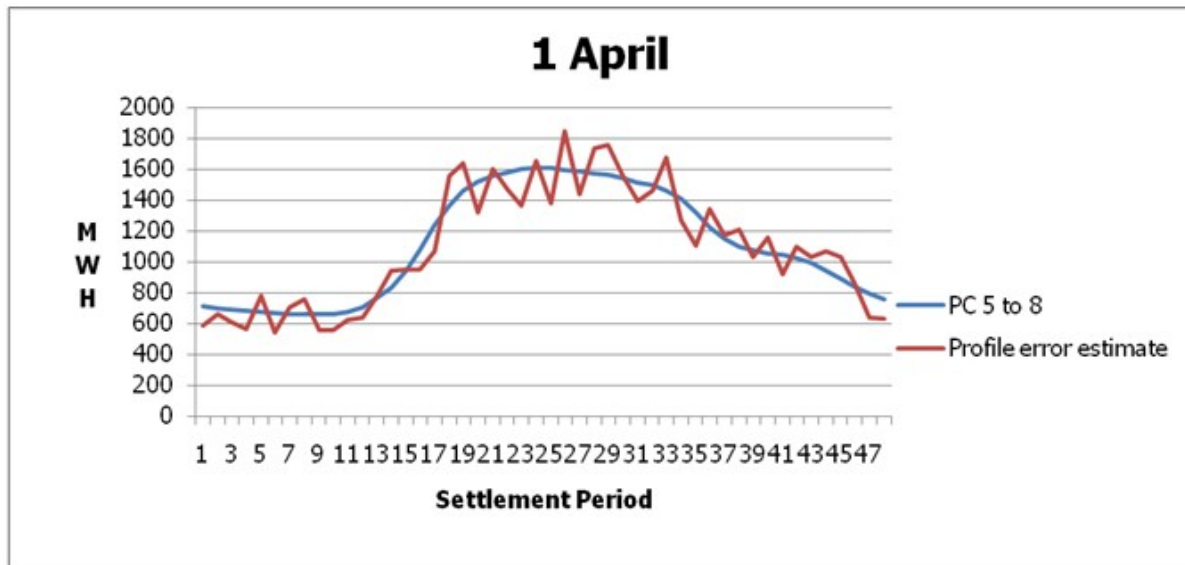


Random errors between +/- 20% can be applied to this shape to simulate the national 'profile error'. This gives a total annual error of approximately 0.9TWh (equivalent to 0.9TWh derived above from previous settlement analysis)

This give the following movement around the HH profile.



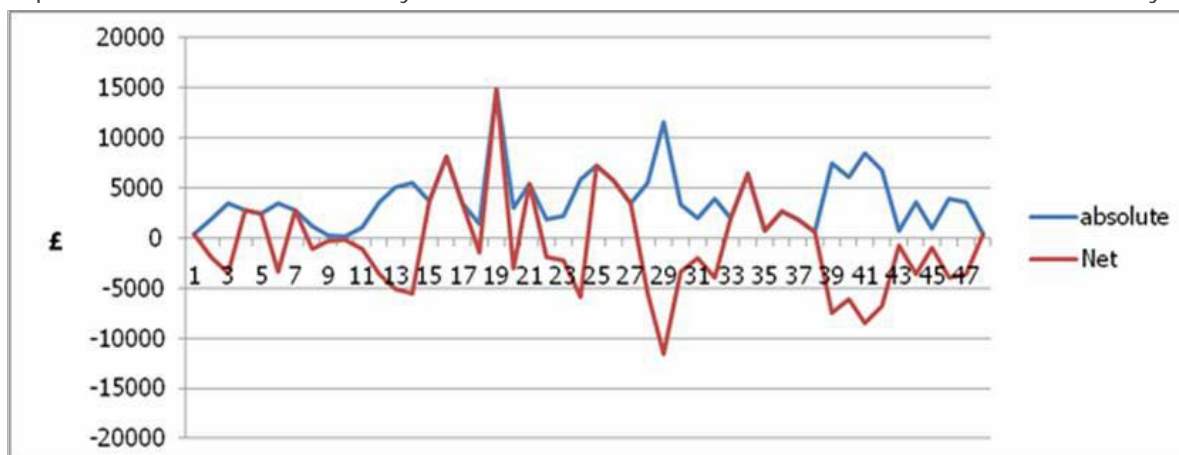
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Where the profiled estimate is greater than the super profile then the volume error can be multiplied by System Sell Price (SSP) and where it is lower the volume error can be multiplied by System Buy Price (SBP) to simulate the cost impact of the error on the industry. The absolute and net error in £ can be calculated. For one day:



Extrapolating this process over a year (BSC Year 2009-10) and running a number of scenarios gives results as follows:

Results	
Total Energy MWh	17,602,737
Allocation Error MWh (abs)	1,846,326
Net Error MWh	923,163
% error	10.5%
Abs Error £	£74,320,457
Net Error £	<b>£17,559,337</b>

Or if random errors are re-calculated:

Results	
Total Energy MWh	17,602,737
Allocation Error MWh (abs)	1,849,617
Net Error MWh	924,808
% error	10.5%
Abs Error £	£74,859,588
Net Error £	<b>£17,179,759</b>

This suggests that if the assumption of errors of between 0 and 20% is reasonable for Profile Classes 5 to 8, as this gives a total net energy error of 0.9TWh (924GWh). Using this total net energy error and SBP and SSP, then the total annual error to the industry of Profiling these customers is £74m and the **Net error is £17m**.





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## Attachments

Attachment A: Profiling and Settlement Review Supplier Consultation, 30 April 2010.

Attachment B: Responses to Profiling and Settlement Review Consultation (May 2010).

Attachment C: Profiling and Settlement Review Impact Assessment for a Cost Benefit Analysis: Half hourly Settlement for Customers in Profile Classes 5-8, 25 August 2010.

Attachment D: Responses to Profiling and Settlement Review Impact Assessment for a Cost Benefit Analysis.

Attachment E: Removal of DUoS barriers to HH Settlement for sub-100kW MPANs