

Mandatory Half Hourly Settlement for Customers in Profile Classes 1-4 and the Closure of Non Half Hourly Settlement

18 July 2011

We are seeking views on the proposal of mandating Half Hourly settlement for customers in Profile Classes 1-4 from a future date. It also proposes that Non Half Hourly settlement will be discontinued at some point in the future. It will inform the cost benefit analysis work and help identify the benefits and barriers to our customers settling volumes of energy on a Half-Hourly basis as Smart (or Advanced) meters are installed for customers in Profile Classes 1-4.

Executive Summary

ELEXON is continuing its review of the profiling and settlement arrangements and is now focussing on the market for domestic and smaller commercial customers (currently Profile Classes 1-4). This is to ensure the wholesale market arrangements remain efficient, effective and economic in a smart metered world. We are looking to optimise the settlement arrangements for the benefit of consumers and industry and help to reap the benefits of smart meters. It is assumed that the meters currently used in this sector will be replaced with Half-Hourly (HH) capable meters by 2019. These meters have been historically settled on Non-Half-Hourly (NHH) meter advances using profiles.

We believe the time is right to consider how these changes affect our customers and the wholesale electricity market under the Balancing and Settlement Code (BSC). We also want to identify any improvements or opportunities for our customers, particularly relating to HH settlement.

We have already undertaken a Cost Benefit Analysis (CBA) of mandating HH settlement for larger commercial customers (Profile Classes 5-8) who are having their meters replaced with Advanced meters. This CBA concluded that there were significant benefits for mandating HH settlement, but that the barriers of HH Distribution Use of System (DUoS) charges need to be addressed. We are now seeking to extend this cost-benefit study for suppliers and customers in Profile Classes 1-4.

Parties are requested to review the proposed framework of settlement requirements defined as our 'strawman' scenario and respond to a number of questions to facilitate an impact assessment. This impact assessment will form the basis of a CBA study which aims to set out what it will mean for Suppliers, and their customers who are currently settled on a NHH basis, to move to HH settlement. The objective of the CBA is to establish the benefits, in terms of cost and accuracy, of using the actual HH data recorded by the meter instead of periodic meter advances which are converted to estimated HH values using profiles.

We believe that this will provide a clear picture on the future wholesale market and enable decisions to be made to ensure that we have the right 'meter-to-bank' process. The detailed requirements making up the strawman scenario and comparison to the current settlement arrangements are set out in this document. The strawman scenario describes a situation where HH settlement is mandated for all customers in Profile Classes 1-4 by a certain date. It also sets out the proposal for ending NHH settlement and the mechanism for closing it. You are invited to respond to a set of questions, which are relevant to your organisation. These questions are set out in the second half of this document.



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In responding we ask that you take account of the strawman scenario together with the underlying rationale and assumptions.

You should provide your response to BSC.Admin@elexon.co.uk by **12 September 2011**.

Any questions or clarifications relating to this document should be directed to Justin Andrews (justin.andrews@elexon.co.uk) on 0207 380 4364.

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1. Introduction

Developments in the market have led to Suppliers being required to install meters which are capable of recording consumption (and where applicable export) on a half-hourly (HH) basis for customers, which are not mandated under the Balancing and Settlement Code (BSC) to be settled HH.

Choosing not to take advantage of this additional meter functionality, at some point in time, could ultimately prove inefficient and costly to redress. The advantages of HH settlement bring clear benefits to all parties from the end users through Suppliers and to central systems but at what point should this be done? This consultation and impact assessment document asks the questions that are key to the prospect of improved settlements for the benefit of all and ultimately the end consumer.

Since April 2009 Suppliers have had an obligation, through their licence conditions, to install Advanced¹ meters for all non-domestic premises for customers in Profile Classes 5-8 by 6 April 2014. The rollout of these meters is currently well underway.

Further supplier licence changes are expected to be made in 2012 to mandate that smart meters be installed for the remaining gas and electricity customers by December 2019. Mandated rollout of smart meters is due to commence in April 2014 with 53m meters to be replaced (29m electricity meters). These electricity meters will be capable of providing HH data.

ELEXON is carrying out a review of the BSC profiling and settlement arrangements in light of these developments. An expert group has been established, the Profiling and Settlement Review Group (PSRG), to support ELEXON in this review. We have already undertaken a Cost Benefit Analysis (CBA) of mandating HH settlement for larger commercial customers (Profile Classes 5-8) who are having their meters replaced with Advanced meters. This CBA concluded that there were significant benefits for mandating HH settlement, but that the barriers of HH Distribution Use of System (DUoS) charges needed to be addressed. Work is underway under the Distribution Charging Methodology Forum (DCMF) on working up changes to the Common Distribution Charging Methodology (CDCM) for approval in 2012.

Furthermore under the BSC, Modification P272 'Mandatory Half Hourly Settlement for Profile Classes 5-8' has now been raised² which seeks to change the BSC to make HH settlement mandatory for customers assigned to Profile Classes 5-8. To take this work further we are now undertaking a CBA with the objective of clearly setting out what it will mean to settle the rest of the market (Profile Classes 1-4) on a HH basis. It will also seek to identify any costs and barriers to HH settlement that can be addressed by the industry and/or regulatory and government bodies.

The next section summarises the conclusions of the CBA for mandating HH settlement for Profile Classes 5-8. The following sections set out the requirements for the mandated HH approach for Profile Classes 1-4, closing NHH settlement processes and the supporting rationale and assumptions. Finally, we set out questions for each type of party/organisation to identify the costs and benefits of HH settlement to support the CBA.

¹ The BSC further clarifies the obligation to install Advanced meters across Profile Classes 5-8. The Metering Equipment must be compliant with Code of Practice 10 (CoP10) at least, which is a HH Metering Equipment standard. This requirement was introduced to help to resolve some of the interoperability issues identified via Modification P230 'Enabling Interoperability through the use of CoP10 and CoP5 Metering'. Therefore, all these Advanced meters will be capable of recording, storing and providing remote access to HH meter data. Therefore they have the potential to be settled as HH under the BSC.

² See the ELEXON website for further details on this Modification, <http://www.elexon.co.uk/Pages/P272.aspx>

2. Mandatory HH Settlement for Profile Classes 5-8: Previous Cost Benefit Analysis

In 2010 we started a review of the existing profiling and settlement arrangements. As part of this work 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 HH settlement including costs to serve and HH DUoS charges.

Therefore, to quantify these barriers we performed a CBA on mandated HH settlement for all customers in Profile Classes 5-8 by 6 April 2014. This equates to approximately 164,000 customers and 18TWh of annual energy (10% of the non half-hourly (NHH) market's energy). Part of this CBA included gathering costs and impact information from Suppliers, their agents and Distribution Businesses as well as undertaking an impact assessment on the BSC arrangements.

The conclusions of the CBA³ study for mandating HH Settlement by 6 April 2014 were:

1. Central cost estimates and potential benefits over a 5 year period; costs: £35.1m and benefits: £85.0m;
2. Support from most parties for HH settlement at some time in the future because of;
 - better risk management for Suppliers;
 - potentially less exposure to imbalance costs;
 - more accurate demand forecasting;
 - more cost reflective tariffs;
 - more accurate billing, settlement and DUoS charges; and
 - reduced carbon emissions from peak load shifting and demand side reduction;
3. Efficiency savings as HH settlement uses the actual energy data that is recorded by the meter, instead of estimates from load profiling and NHH meter advances;

The PSRG believed, based on the assumptions of the analysis, that there was a clear cost benefit, but they noted that there were still significant costs for:

- Supplier agency charges for HH settled customers, as the industry mindset is still that HH equates to large customers; and
- HH DUoS as the current charging regime dis-incentivises HH billing and settlement. The costs and benefits detailed above are based on the issue of HH DUoS charges having been resolved

The PSRG therefore concluded that HH settlement should be mandated for Profile Class 5-8 customers. They felt that mandating HH settlement would:

- increase the HH market size significantly, therefore supplier agency costs (costs to serve) would reduce further; and

³ See ELEXON Cost Benefit Analysis on mandated HH settlement for Profile Classes 5-8. See link [Profile Class 5-8 CBA](#). (Reference 1)



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- help to identify issues for the settlement of smart meters, as it could 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.

However, they 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 2013.

3. Overview of the Cost Benefit Analysis for Profile Classes 1-4

Through the CBA we are seeking to estimate the incremental costs and benefits of mandatory HH settlement for all NHH customers currently in Profile Classes 1-4.

We believe that benefits will be realised by mandating HH settlement for customer in Profile Classes 1-4 through the use of accurate HH data. This will build upon the benefits identified for mandating HH settlement for customers in Profile Classes 5-8. These benefits include:

- **Accuracy:** Having a more accurate allocation of energy costs to the correct Supplier for the correct time period;
- **Demand Forecasting:** With increased availability of HH data for these sites, demand forecasting should be more accurate as it will be based on more detailed and timely meter data;
- **Product Innovation:** Parties should be able to construct more cost reflective tariffs with the increased resolution available from HH metered data;
- **Energy Management Products:** Companies will be able to offer customers better and more focussed ways for reducing and managing their energy consumption with the availability of HH data;
- **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 advanced meter functionality and there would be only be a small additional benefit on settling HH over NHH.
- **Reduced Energy Bills:** 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 Transmission Network Use of System (TNUoS) charges; 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 due to the removal of the profiling error;
- **Reduced Agency Costs:** there is the potential for current costs be reduced due to economies of scale and reduction in HH agency costs as the number of HH settled meters increases;
- **Settlement Cashflows:** Parties should be able to forecast 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% of energy is settled on actual HH data by the first reconciliation run⁴ (R1);
- **Reduced DUoS Charges:** The availability and timeliness of the HH data will enable more accurate DUoS billing and better reporting of losses;

⁴ This where it was proposed that Suppliers collect and settle 99% of the actual HH energy a month after first settlement run instead of the current requirement of 14 months.



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- Better System Planning: HH data would allow for more timely planning of system development, reduced need for reinforcement, more cost reflective reactive or capacity charging; and
- Demand Side Response: HH data will improve the ability to support Demand Side Response which may result in reduced carbon emissions resulting from behavioural change of customers and peak load shifting. With HH data it would enable more accurate settlement of any demand altered by demand side response or peak load shifting. There may also be security of supply benefits.

The proposed change is that all Suppliers will settle their Profile Class 1-4 customers as HH by a specific date at a point after April 2014 when the mandated roll out of smart meters begins. This date will be driven by one of a number of factors such as when a 'tipping point' is reached of smart meters installed, or when the Data Communications Company (DCC) service includes registration activities or when smart metering rollout completes in 2019. We are seeking views on the driver(s) for setting this date as part of this impact assessment.

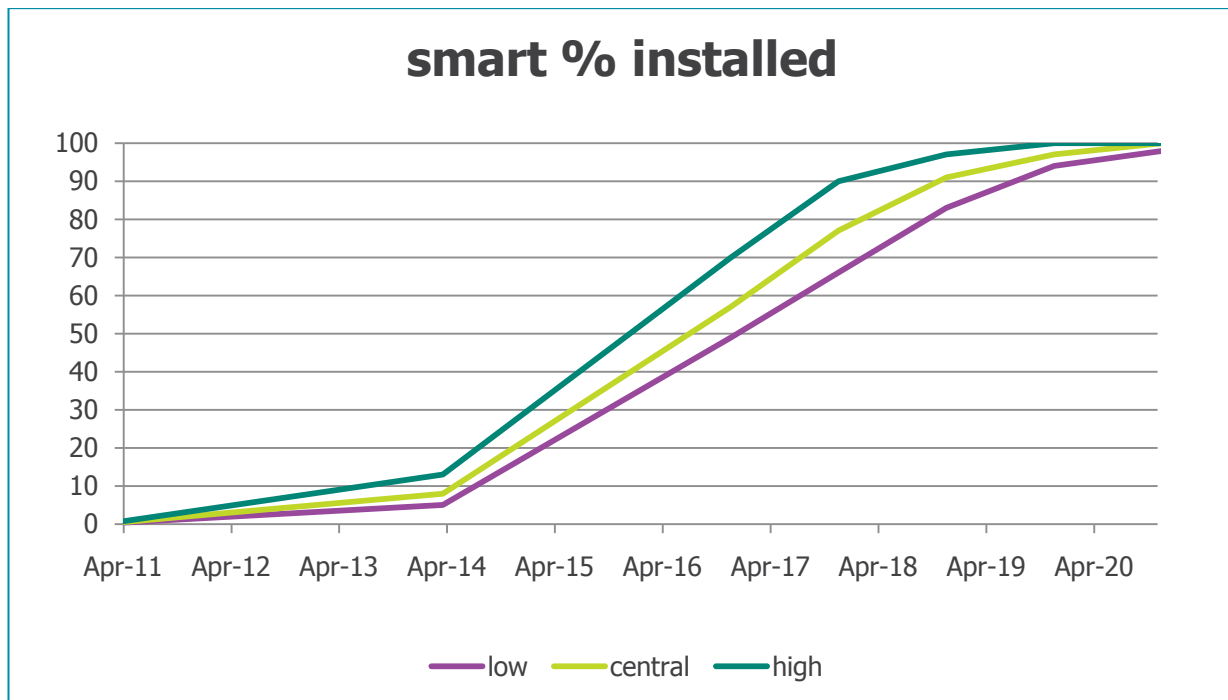
In order to carry out the CBA we are asking for impact assessments from Suppliers, their Agents, Distribution Businesses, National Grid, BSCCo, MRASCo and Electralink, and welcome view from other bodies; regulatory/governing and consumer bodies. The impact assessment will identify costs and impacts due to mandated HH settlement compared with elective HH or NHH settlement for all customers in Profile Classes 1-4. It also seeks to identify the cost and benefits of switching off NHH settlement systems and processes.

The current number of HH meters and associated energy volumes involved are shown below.

Profile Class/HH	Number of metering systems	Annual energy (TWh)
1-2	27,160,529	115.4
3-4	2,122,995	34.8
5-8	163,563	17.5
HH	115,500	154.5
Total	29,562,587	322

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The following graph depicts the assumed rollout profile of smart meters. This is taken from the DECC SMIP response document, March 2011 (see [DECC implementation rollout strategy](#)).





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4. Strawman Scenario Mandatory Settlement for Profile Classes 1-4 and Closure of NHH Settlement

The aim of this CBA is to gain a better understanding of the advantages and disadvantages of mandating HH Settlement for sites with Smart (or Advanced) meters in Profile Classes 1 to 4 by a certain date (to be decided).

For the purpose of this CBA, please assume that this new obligation would become effective with the following requirements.

4.1 Strawman requirements

No.	Requirement	Requirement Detail
1	<p>All customers in Profile Classes 1-4 with HH capable meter shall be settled as HH from [date].</p> <p>There are key events that can drive this date, see requirement detail.</p>	<p>A mandatory deadline would be set and the BSC would require the use of HH settlement for customers in Profile Classes 1 to 4 with HH capable (smart or advanced) meters installed.</p> <p>On Change of Supplier (CoS) mandatory HH settlement would still apply.</p> <p>Prior to this date Suppliers can choose NHH or HH settlement for their customers in these Profile Classes.</p> <p>There are a number of scenarios for setting this [date] as follows:</p> <ul style="list-style-type: none"> • Scenario 1: By April 2014. This is when the DCC service is expected to go live; • Scenario 2: By April 2017. This is estimated to be 12 months after the date when 50% of smart meters have been installed; • Scenario 3: [12] months after the date when at least [50]% of the customers in the existing NHH market are being settled HH (electively) via a smart or Advanced meter; • Scenario 4: By April 2018. This is estimated to be when 80% of smart meters have been installed; • Scenario 5: By 31 Dec 2019 on the projected completion of the smart meter rollout; and • Scenario 6: By 31 Dec 2020, 12 months after the completion of the smart meter rollout. <p>All of the dates above are based on the DECC March 2011 SMIP response.</p> <p>NHH settlement is allowed to continue past this date (for meters that have not been replaced with a smart or Advanced meter or where meters installed during the foundation stage have not been adopted by the DCC) until the closure of NHH settlement. However, NHH settlement will cease from a future date determined by Requirement 2 below.</p> <p>Suppliers moving their customers to HH would not have the ability to 'elect' to go back to NHH Settlement.</p>



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No.	Requirement	Requirement Detail
2	<p>Central SVA Costs of NHH settlement recovered only from Suppliers settling NHH until closure of NHH settlement at a [date] after the 'mandation' date:</p> <p>After this date:</p> <ul style="list-style-type: none"> • Profiles 1-4 discontinued (and frozen) • No profiling of any energy at all • Mandatory HH settlement for Unmetered Supplies • Mandatory HH settlement for export 	<p>With the assumption that Profile Classes 5-8 are already mandatory HH settlement, Profile Classes 1 to 4 would fall into disuse⁵.</p> <p>After the 'mandation' date in Requirement 1 the costs of the SVA NHH settlement processes (incl. profiling, Teleswitch, NHH software, etc) would only be recovered from Suppliers settling their customers NHH. This 'wither-on the vine' approach should be considered further to avoid NHH costs being recovered from just one supplier as the numbers of customers being settled NHH reduces. For example, one approach may be the apportionment of costs over a BSC Year pro-rated by energy volume and the number of months in that year a Supplier has used NHH settlement for its customers.</p> <p>Consideration will need to be given to the run off of the NHH arrangements, for example the reconciliation run timetable and support to the disputes process.</p> <p>When NHH settlement is closed new estimating/ defaulting requirements and processes will be put in place to produce HH data for customers who either do not have a HH capable meter or remote reading is not in place.</p> <p>The Profile Administrator would discontinue load research completely (as it was only concerned with Profile Classes 1 to 4). The regression equations and other profiling deliverables would therefore be 'frozen'. Currently HHDCs use the Default Period Profile Class Coefficients (DPPCC) and the regression data behind these DPPCCs would remain frozen but would be updated to reflect calendar days in each new Settlement year. This data would be used for estimation purposes of missing data by Half Hourly Data Collectors.</p> <p>All UMS would be settled HH with the Supplier's Meter Administrator Agent submitting HH data to the HHDC.</p>
3	<p>Transition to HH settlement prior to the 'mandated' date: Supplier choice and elective HH prior to the mandate</p>	<p>Suppliers can choose how or when they phase in the new HH requirements prior to mandatory deadline. For example, some Suppliers might choose to switch customers to HH settlement as soon as they install smart or Advanced metering; others might choose to perform a bulk Change of Measurement Class some time before the mandatory deadline.</p> <p>For the avoidance of doubt Suppliers of customers in all Profile Classes can choose at any time to switch them to HH settlement.</p> <p>It should be noted that there is a risk of undertaking a bulk CoMC during the foundation stage under Scenario 1 (from Requirement 1 above) that the registering Supplier may not be the operating Supplier.</p>

⁵ 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", it will estimate HH consumption on the basis of other HH data from similar customers.



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No.	Requirement	Requirement Detail
4	<p>New and changed Measurement Class definitions for:</p> <ul style="list-style-type: none"> NHH and HH Domestic Non Domestic >100 kW <p>NHH Measurement Classes would become redundant once NHH settlement is switched off.</p> <p>Profile Class set to '0' for HH meters.</p>	<p>The current Measurement Classes are:</p> <ul style="list-style-type: none"> A Non Half Hourly Metered B Non Half Hourly Unmetered C HH metered in 100kW Premises D Half Hourly Unmetered E HH metered not 100kW Premises <p>New definitions would be required:</p> <ul style="list-style-type: none"> A Non Half Hourly Metered B Non Half Hourly Unmetered C HH metered in 100kW Premises D Half Hourly Unmetered E HH Non Domestic I&C metered not 100kW Premises F HH Non Domestic SME metered not 100kW Premises G Half Hourly Domestic Metered H Half Hourly Settled with a Non Half Hourly Meter <p>Any customers who are currently registered in Measurement Class C or E that now fall in the other Measurement Classes would need to be moved.</p> <p>Potentially new Consumption Component Classes would also be required to provide the relevant data split by these Measurement Classes for Suppliers and Distribution Businesses. Furthermore, these splits may also be required in settlement for applying GSP Group Correction Factor to certain quantities.</p> <p>The Profile Class identifier will not be used after the change to HH. It would be set to '0' as currently for HH settled meters.</p>
5	<p>Revised PARMS serials:</p> <p>SP08c</p> <p>(no change to SP08a and SP08b)</p>	<p>SP08a= 97% of NHH meters to be settled on AAs at RF. No change but would either 'wither on the vine' or a date would be chosen when there this serial is removed.</p> <p>SP08b = 99% of HH meters to be settled on actuals at SF for HH >100kW: No change.</p> <p>SP08c = 99% at of HH meters to be settled on actual at R1 for HH < 100kW. This would require Suppliers to achieve 99% of energy settled on actual data by the First Reconciliation (R1).</p> <p>SP08c would be amended so that it would also apply to all other HH Measurement Classes (E, F, G and H).</p> <p>Originally it was 99% at RF and applied only to elective HH y (Measurement Class E).</p>



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No.	Requirement	Requirement Detail
6	<p>Removal of redundant Code of Practices</p> <p>The BSC would refer to the meter requirements in Smart Energy Code (SEC) for smart meters.</p>	<p>The NHH Codes of Practice 6,7,8,9 would be frozen and would fall into disuse:</p> <ul style="list-style-type: none"> CoP6: Code Of Practice For The Metering Of Energy Imports Via Low Voltage Circuits Fused At 100 Amps Or Less Per Phase For Settlement Purposes CoP7: Code Of Practice For The Metering Of Energy Imports Via Low Voltage Circuits Fused At 100 Amps Or Less Per Phase For Settlement Purposes CoP8: Code Of Practice For The Metering Of Import Active Energy Via Low Voltage Circuits For Non-Half Hourly Settlement Purposes CoP9: Code Of Practice For The Metering Of Import And Export Active Energy Via Low Voltage Circuits For Non-Half Hourly Settlement Purposes <p>The BSC would refer to the existing CoPs for >100kW market and for Advanced meters (currently CoP10 compliant). For smart metered <100kW the BSC would reference the SEC for compliance against the agreed meter technical specification</p> <p>The SEC defined commissioning and proving requirements would be sufficient for BSC.</p>
7	No Technical Assurance of smart meters or Advanced meters in Measurement Classes E to H: No change	Smart or Advanced Metering Systems 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 only applied to >100kW market (Measurement Class C).
8	Site Visits for smart or Advanced meters: No change	<p>No change to existing requirements for site visits every 2 years.</p> <p>Smart or Advanced Metering Systems would still require a site visit every two years⁶ (to check the state of the Metering Equipment).</p>
9	<p>Supplier Agents: HH Meter Operator Agents (MOAs), Data Collectors (HHDCs) and Data Aggregators.</p> <p>HH MOAs: No changes</p> <p>HHDCs:</p> <ul style="list-style-type: none"> New requirements for data estimation and defaults Different 	<p>HHMOs: No changes to the existing requirements at this stage (BSCP514). However, there may be changes that are required through the SEC for installing and maintaining a smart meter.</p> <p>No changes to specific requirements such:</p> <ul style="list-style-type: none"> Investigation of inconsistencies (BSCP 514, section 5.4.1); Changing a metering system; or Introducing a difference for domestic/non domestic split. <p>HHDCs:</p> <ul style="list-style-type: none"> >100kW and Advanced meters: no change to requirements including estimation and defaulting;

⁶ Note, the licence permits a supplier to request from the Authority a derogation from the 'must inspect' obligations.



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No.	Requirement	Requirement Detail
	<p>requirements for data validation for smart meters read by the DCC and Advanced meters read by the HHDC</p> <p>HHDCs: No changes</p>	<ul style="list-style-type: none"> New estimation and default processes will be required to introduce differences for domestic and non domestic customers to allow the HHDC to produce HH data for customers who do not have a smart or Advanced meter or where data has not been collected for a particular meter.
10	<p>DTC flows: Increased resolution for HH meter data to 0.001kWh from 0.1kWh</p>	<p>The relevant DTC flows that contain HH meter data (D0003, D0010, D0022, D0036, and D0275) will need increased resolution. Currently the format is 7,1 resulting in 0.1kWh resolution. It is proposed that this is changed to 7,3 to avoid any rounding errors. Increased resolution is required to avoid energy being inaccurately accounted for in settlement.</p>



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4.2 Rationale for the Strawman Requirements.

No.	Requirement	Rationale
1	<p>All customers in Profile Classes 1-4 with HH capable meter shall be settled as HH from [date].</p> <p>There are key events that can drive this date, see requirement detail.</p>	<p>We believe that using the HH meter data available from the smart meter will enable a Supplier's settlement bills to accurately reflect the customer's true consumption. HH settlement is more accurate and will avoid the smearing effects of profiling NHH meter data. The mandatory deadline date can be set based on a number of different points, as defined in the following scenarios.</p> <p>There are a number of scenarios for this [date] as follows:</p> <ul style="list-style-type: none"> • Scenario 1: By April 2014. This is when the DCC service is expected to go live. Mandating HH settlement when DCC services go live would provide a clean set of processes (no NHH) for the DCC and SEC to govern. It should be noted that the DCC will still have to handle NHH registration for 'dumb' meters not yet replaced with smart or Advanced meters when it takes over registration for all SVA meters; • Scenario 2: By April 2017. This is estimated to be 12 months after the date when 50% of smart meters have been installed. Under this scenario the trigger point will be when a certain percentage of smart meters have been installed (e.g. 50%). This will reflect the tipping point for when profiles are no longer accurate for customers with smart/Advanced meters due to their change in consumption patterns. Providing 12 months notice give Suppliers and their agents sufficient time to change their systems and processes to process HH data; • Scenario 3: [12] months after date when at least [50]% of the customers in the existing NHH market are being settled HH (electively) via a smart or Advanced meter. This scenario is similar to 2 above but is based on the driver that Suppliers (or their customers) have elected to be settled HH. This does mean that the date is more fluid and indeed may never happen as the drivers for HH settlement may be more commercially driven by a Supplier's business; • Scenario 4: By April 2018. This is estimated to be when 80% of smart meters have been installed. This gives a definite date for market participants to prepare for prior to the completion of the mandated rollout in 2019; • Scenario 5: By 31 Dec 2019 on the projected completion of the smart meter rollout. This is the date when smart meters should have been installed at all Profile Class 1 – 4 premises. Under this scenario it should be possible to switch off NHH settlement at the same time as mandating HH settlement. • Scenario 6: By 31 Dec 2020, 12 months after the completion of the smart meter rollout. This scenario has the benefit that it will allow a 'bedding down' period after the mandated completion of smart meter rollout. It would allow for other



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No.	Requirement	Rationale						
		smart issues to have been indentified and/or resolved before the HH mandate comes into effect.						
2	<p>Central SVA Costs of NHH settlement recovered only from Suppliers settling NHH until closure of NHH settlement at a [date] after the 'mandated' date:</p> <p>After this date:</p> <ul style="list-style-type: none">• Profiles 1-4 discontinued (and frozen)• No profiling of any energy at all• Mandatory HH settlement for Unmetered Supplies• Mandatory HH settlement for export	<p>The requirement to discontinue profiling and remove NHH settlement processes will require changes to Unmetered Supplies (UMS) This should lead to more accurate settlement of UMS.</p> <p>Recovering NHH SVA costs from only those Suppliers that settling NHH would provide a commercial incentive on Suppliers to switch to HH settlement. The costs applied to each Supplier would be calculated in the same way as currently i.e. based on metered energy volume. However it may be necessary to consider this further if it results in one or two Suppliers paying the full costs of NHH settlement once the majority of meters have been switched to HH.</p> <p>There would be cost savings from the ultimate removal of NHH settlement:</p> <ul style="list-style-type: none">• No Profile Administration service;• No Teleswitch agent⁷;• No need for NHH EAC/AA and NHHDA software;• Removal of NHH parameters in Market Domain Data;• Reduced scope of performance assurance techniques resulting in lower costs (e.g. NHH operational Audit); and• Reduced Reconciliation Run timetable as more accurate HH data will be provided at an earlier stage. <p>With the assumption that Profile Classes 5-8 are already mandatory HH settlement, Profile Classes 1 to 4 would fall into disuse⁸.</p>						
3	<p>Transition to HH settlement prior to the 'mandated date: Supplier choice and elective HH prior to the mandate</p>	<p>This gives Suppliers the flexibility to choose 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 (CoMC) and change of agent on the final days leading up to the mandatory deadline. However, this would be mitigated through a new centrally defined bulk CoMC process.</p>						
4	<p>New and changed Measurement Class definitions for:</p> <ul style="list-style-type: none">• NHH and HH• Domestic	<p>New definitions would be:</p> <table><tr><td>A</td><td>Non Half Hourly Metered</td></tr><tr><td>B</td><td>Non Half Hourly Unmetered</td></tr><tr><td>C</td><td>HH metered in 100kW Premises</td></tr></table>	A	Non Half Hourly Metered	B	Non Half Hourly Unmetered	C	HH metered in 100kW Premises
A	Non Half Hourly Metered							
B	Non Half Hourly Unmetered							
C	HH metered in 100kW Premises							

⁷ This would remove a current risk associated with the Teleswitch service discontinuing when the contract expires.

⁸ 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", it will estimate HH consumption on the basis of other HH data from similar customers.



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No.	Requirement	Rationale
	<ul style="list-style-type: none"> Non Domestic >100 kW <p>NHH Measurement Classes would become redundant once NHH settlement is switched off.</p> <p>Profile Class set to '0' for HH.</p>	<p>D Half Hourly Unmetered</p> <p>E HH Non Domestic I&C metered not 100kW Premises</p> <p>F HH Non Domestic SME metered not 100kW Premises</p> <p>G Half Hourly Domestic Metered</p> <p>H Half Hourly Settled with a Non Half Hourly Meter</p> <p>The Profile Class identifier will not be used after the change to HH. It would be set to '0' as currently for HH settled meters. However, it is believed that a distinction will still need to be made between the domestic, non domestic, below 100kW and the above 100kW markets. For reporting purposes and to aid parties in their own business processes, differentiation of I&C and SME customers is provided.</p> <p>A new Measurement Class is also introduced for customers who, for whatever reason, have not had their meter replaced with either a smart or Advanced Meter.</p> <p>The new Measurement Classes will allow Suppliers to fulfil their licence requirements in relation to domestic and non domestic premises. They will also allow different requirements for Meter Operation, Data Collection and Performance Assurance if required (see section 6).</p>
5	<p>Revised PARMS serials: SP08c</p> <p>(no change to SP08a and SP08b)</p>	<p>SP08a= 97% of NHH meters to be settled on AAs at RF. No change but would 'wither on the vine'.</p> <p>SP08b = 99% of HH meters to be settled on actuals at SF for HH >100kW: No change.</p> <p>SP08c = 99% at of HH meters to be settled on actuals at R1 for HH < 100kW (currently this is 99% at RF and applied to elective HH only).</p> <p>SP08c would be amended so that it would now apply to all other HH Measurement Classes, E, F, G and H. The changes are to reflect the fact that the smart and advanced meters installed will have remote communications so can be read in much quicker timescales than manual reads.</p> <p>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 for both domestic and non domestic customers.</p>
6	<p>Removal of redundant Code of Practices</p> <p>The BSC would refer to</p>	<p>The NHH Codes of Practice 6,7,8,9 would be frozen and would fall into disuse as the number of NHH meters installed would diminish.</p> <p>The BSC would continue to refer to the existing CoPs for >100kW</p>



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No.	Requirement	Rationale
	the meter requirements in Smart Energy Code (SEC) for smart meters.	<p>market and for Advanced meters (currently CoP10 compliant). For smart metered <100kW the BSC would reference the SEC for compliance against the agreed meter technical specification (defined under the SEC). The SEC will need to ensure that smart meters record data accurately and that this data can be retrieved safely and securely.</p> <p>The SEC defined commissioning and proving requirements would be sufficient for BSC as the DCC would be required to ensure safe data retrieval from the smart or advanced meter.</p>
7	No Technical Assurance of smart meters or Advanced meters in Measurement Classes E - H No change	Currently there are no Technical Assurance visits for Metering Systems in HH market <100kW (Measurement Class 'E'). This is because of the energy volume associated with each Metering System and the low numbers in this market. Due to low energy volumes in PCs 1-4 we believe no change is required.
8	Site Visits for smart or Advanced meters: No change	<p>No change to existing requirements for site visit 2 years.</p> <p>Smart or Advanced Metering Systems would still require a site visit every two years (to check the state of the Metering Equipment). Note, the licence permits a supplier to request from the Authority a derogation from the 'must inspect' obligations. The right to apply for a derogation to this requirement is not being removed.</p> <p>Site visits help Suppliers meet their BSC obligations. The current BSC requirements are felt to be sufficient. Any change would have process implications and costs. The aim of the CBA is to investigate a 'least change case'.</p>
9	<p>Supplier Agents: HH Meter Operator Agents (MOAs), Data Collectors (HHDCs) and Data Aggregators.</p> <p>HH MOAs: No changes</p> <p>HHDCs:</p> <ul style="list-style-type: none"> New requirements for data estimation and defaults; and Different requirements for data validation for smart meters read by the DCC and Advanced meters read by the HHDC. <p>HHDA: No changes</p>	<p>As the consumption of the customers in Profile Classes 1-4 is less than the existing mandatory HH market (and the consumption pattern differs between domestic and non domestic customers) then the validation and defaulting requirements will need to be revised accordingly. The volume and granularity of the HH data for these customers is different than for existing HH customers.</p> <p>Requirements on HHDCs and HHMOAs would change but only to the extent that there would be new less onerous validation requirements and new defaulting profiles provided under the BSC.</p> <p>Further consideration needs to be given to the data estimation processes for customers with switched or heating (and/or hot water) load. These are currently customers in Profile Classes 2 and 4 where different load profiles are applied to the normal and switch loads.</p> <p>No changes are required for HHDA as they will be continuing to aggregate the data sent to them by the HHDCs.</p>



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No.	Requirement	Rationale
10	DTC flows: Increased resolution for HH meter data to 0.001kWh from 0.1kWh	The relevant DTC flows that contain HH meter data (D0003, D0010, D0022, D0036, and D0275) will need increased resolution. Currently the format is 7,1 resulting in 0.1kWh resolution. It is proposed that this is changed to 7,3 to avoid any rounding errors. Increased resolution is required to avoid energy usage being inaccurately reflected in settlement. Care will need to be taken to record the accuracy of the HH meter concerned. Existing large SVA sites may not be read to this level of accuracy, but as long as the relevant DTC flows are populated correctly this will be sufficient.

We refer to the above requirements as our 'strawman' scenario, because they are intended to be a clear basis for the CBA and subsequent discussions. They are not recommendations on the best way to introduce the new obligation. The strawman assumes to keep the CBA as simple as possible and further investigate the barriers to HH settlement.

Our CBA will compare the requirements in the 'strawman' scenario (in which Profile Classes 1 to 4 are settled HH) with a 'base case' scenario (in which Profile Classes 1 to 4 continue to be settled NHH with an element being elective HH). The base case scenario below clearly sets out the baseline for comparison with the strawman.



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5. Base Case Scenario

In order to undertake the CBA, the strawman requirements will be compared against a base case scenario. All parties should use these base case requirements when identifying incremental costs and impacts and any relevant issues. These base case requirements are defined as follows:

No.	Requirement	Requirement Detail
1.	All Profile Class 1-4 customers settled NHH	It is assumed all customers fitted with a smart meter under the licence obligation will continue to be settled NHH. Suppliers will still have the option of settling such customers HH, 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.
2.	Profile Classes 5-8 will already be settled HH	It is assumed (for the purposes of the impact assessment) that Modification P272 will have been implemented.
3.	Measurement Class 'C' or 'E': Supplier choice	In those few cases where Suppliers do opt for HH settlement, they can choose whether to register the Metering System under Measurement Classes 'E' or 'C'.
4.	PARMS Serials: No change	The Performance Serials for all Measurement Classes will remain unchanged i.e. SP08a (NHH) 97% of energy settled on actual data by Final Reconciliation (RF).
5.	Supplier Agents: No change	No changes to BSC Procedures for NHH or HH MO, DC and DA.
6.	Meter Requirements	The BSC will refer to the meter requirements in Smart Energy Code (SEC) for smart meters.



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6. Assumptions

The following assumptions underpin the 'strawman' scenario requirements.

No.	Assumption	Comments
1	<p>Number of meters and associated energy volumes:</p> <ul style="list-style-type: none"> Profile Classes 1-4: 29.3m meters and 150 TWh of annual energy (this includes both import and export): <ul style="list-style-type: none"> Profile Classes 1-2: 27.2m meters and 115 TWh Profile Classes 3-4: 2.1m meters and 35 TWh Profile Classes 5-8: 164,000 meters and 18 TWh of annual energy HH market: 115,500 meters and 156 TWh of annual energy (this includes both import and export) 	See section 3, data as of 1 April 2011.
2	HH data will be available for settlement purposes for all PC 1-4 customers.	<p>HH consumption data from domestic premises can be considered to be personal data when this data is combined with other information that can be used to identify an individual (e.g. a metering address or through a billing system). Central settlement does not have such visibility and therefore consumption volumes are anonymised in central systems. However, Suppliers (and their agents) will hold additional data sources from which it may be possible to identify customers. From a Settlement point of view, if Settlement moves to HH, the Supplier will need to accurately forecast and then check their Settlement liabilities from the HH volumes collected for their portfolio of customers. Previous discussions within the DECC's SMIP Programme's data access group has highlighted the need for accurate data to support</p>



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No.	Assumption	Comments
		Settlement processes (although not mandatory HH Settlement). ⁹ We note that work is ongoing on data privacy and that this may have an impact on this CBA.
3	The smart meter will be as defined in the draft meter technical specification (see definition in glossary).	See definition in glossary and link to SMIP meter design requirements document.
4	All smart meters will be installed by December 2019. Note there will be a number of existing meters that have not been replaced.	As defined in the SMIP March 2011 response. Any meters that have not been replaced by a smart or advanced meter will still be settled as HH. The HHDC will estimate and submit HH data for these. Rollout profile of smart meters will be as defined in DECC SMIP response, see section 3.
5	The DCC will provide meter readings only to Suppliers when the DCC service goes live.	Suppliers will need to pass on meter readings to their DCs. This will have implications for Suppliers and their systems.
6	Profile Classes 5-8 will already be settled HH.	It is assumed (for the purposes of the impact assessment) that Modification P272 will have been implemented. This will include the requirement that for PC5-8 99% of actual energy will be settled at R1.
7	Suppliers will contract directly with HHMOAs (as well as customers) for HH meters.	Currently in the HH market normal practice is for customers to contract directly with MOAs.
8	GSP Group Correction will be applied (with appropriate scaling weight) to HH meters.	The current SVG decision to apply the principle of GSP Group Correction to HH meters will be in place, see SVG 122/09. This is due to be implemented 01 April 2012.
9	New bulk CoMC process	The current CoMC process is described in BSCP502 and BSCP514. A Bulk CoMC facility will be required and will be deemed to be simpler than the current process for the purposes of this impact assessment.

⁹ ELEXON notes that the Government's smart Programme is determining policy with regards to data access. For this reason we do not seek to impact assess the interaction with privacy for settling domestic customers HH. We will however share the results with the Programme to support any considerations with regards to the case for data access requirements for existing and future Settlement needs.



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No.	Assumption	Comments
		Since registration of these customers will be centralised in 2016/7, Suppliers will define the granularity of data and read schedule for meters for the DCC (through an automated process). For the purposes of this CBA, it is assumed that the concept of Measurement Class will be retained in the DCC registration system.
10	No over-recovery of SVA HH costs.	<p>Suppliers would continue to be charged a monthly SVA Specified Charge for each HH 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 HH Metering Systems increased, so as to avoid any over-recovery.</p> <p>The BSC Panel have already agreed this be monitored (179/07) and any change to the number of HH metering systems would be highlighted.</p>
11	<p>New methodology for calculating NHH or HH DUoS charges</p> <p>Aggregated data would be provided to Distribution Business for DUoS billing (similar to existing NHH Supercustomer approach).</p>	<p>The current methodology for calculating DUoS will be changed to remove the barriers of higher HH charges.</p> <p>It is assumed that the new methodology will not provide a distinction in costs between HH and NHH settled meters on an annual basis. There may be difference in timebands for charging, e.g. 'Red', 'Amber' and 'Green' for HH and 'day/night split for NHH, but on average the annual charge would be the same.</p> <p>It is recognised that these issues are being raised separately with Distribution Businesses (e.g. though the DCMF, DCUSA Panel).</p>
12	TNUoS charges will be changed to ensure cost reflectivity but the methodology would not change.	<p>The charges will need to be cost reflective, recognising the shift in volume from the NHH to HH market. The charges will need to ensure that each part of the market is paying the appropriate charge and not cross-subsiding the other.</p> <p>Methodology will be fair and equitable for small or large HH customers.</p> <p>The current methodology for calculating TNUoS would remain unchanged. However, the proposal impacts the cost reflectivity of TNUoS charges. TNUoS charges are calculated each financial year using forecast demand volumes.</p>



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No.	Assumption	Comments
		Therefore as the demand base over which TNUoS is spread changes (i.e. Users migrated from NHH to HH), it impacts TNUoS charges and would need to be catered for when TNUoS charges are set.



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7. Consultation and Impact Assessment Questions

Please identify in your responses any information or costs that you wish to be kept confidential. The questions are listed below for your information but are contained within a separate word document for you to complete.

Parties are requested to provide impacts on their processes and systems and procedures to support the mandated HH settlement arrangements and the closure of the NHH settlement arrangements.

7.1 Questions for Suppliers

Definition Questions

No.	Question	Response
1.	<p>When do you think Profile Class 1-4 customers with a smart (or Advanced) meter should be mandated to be settled HH:</p> <ul style="list-style-type: none"> • Scenario 1: By April 2014. This is when the DCC service is expected to go live; • Scenario 2: By April 2017. This is estimated to be 12 months after the date when 50% of smart meters have been installed; • Scenario 3: [12] months after date when at least [50]% of the customers in the existing NHH market are being settled HH (electively) via a smart or Advanced meter; • Scenario 4: By April 2018. This is estimated to be when 80% of smart meters have been installed; • Scenario 5: By 31 Dec 2019 on the projected completion of the smart meter rollout; • Scenario 6: By 31 Dec 2020, 12 months after the completion of the smart meter rollout; • Not at this time: It is too early in the implementation of smart metering for it to be determined; or • When a smart (or Advanced) meter is installed? <p>Please provide supporting rationale.</p> <p>All provide views on the dates and %s with regards to Scenarios 2 and 3.</p>	
2.	<p>Do you support the approach of switching off the NHH settlement processes at some date after the mandated date and agree with the approach of the Central SVA Costs of NHH settlement recovered only from Suppliers settling NHH?</p>	



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No.	Question	Response
	Please provide supporting rationale.	
3.	What do you think are the pros and cons of an alternative approach of mandating HH settlement for Profile Classes 3-4 first, then at a later date mandating Profile Classes 1-2? Please provide supporting rationale.	
4.	What is the impact on you of not maintaining the Profile Class Identifier for your Profile Class 1-4 customers who are now settled HH? What are the implications for your systems with regards to the Profile Class component of the Meter Point Administration Number (MPAN) being '00'? Please provide supporting rationale.	
5.	What are your views on setting the PARMS serial for SP08c to 99% at R1? Please provide supporting rationale.	
6.	What issues do you see if the settlement of customers in Profile Classes 1-4 (and PCs 5-8) was left optional (elective)? Please provide supporting rationale.	

Impact Questions

No.	Question	Response
7.	What are the additional set up costs, impacts, and associated lead times in settling all your Profile Class 1-4 customers HH for each of the following scenarios: <ul style="list-style-type: none"> Scenario 1: By April 2014. This is when the DCC service is expected to go live; Scenario 2: By April 2017. This is estimated to be 12 months after the date when 50% of smart meters have been installed; Scenario 3: [12] months after date when at least [50]% of the customers in the existing NHH market are being settled HH (electively) via a smart or Advanced meter; Scenario 4: By April 2018. This is estimated to be when 80% of smart meters have been installed; 	



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No.	Question	Response
	<ul style="list-style-type: none"> Scenario 5: By 31 Dec 2019 on the projected completion of the smart meter rollout; Scenario 6: By 31 Dec 2020, 12 months after the completion of the smart meter rollout. <p>It is assumed that a smart or Advanced meter has been installed.</p> <p>Please break down your costs by MPAN (or per portfolio) for:</p> <ol style="list-style-type: none"> Internal process and systems; Supplier Agency costs, Meter Operation, Data Collection, Data Aggregation; Transaction costs for changing the measurement class from NHH to HH; Any changes to your BSC settlement costs, e.g. undergoing qualification to become a HH Supplier or any re-qualification costs due to increased volumes of HH settled meters; Any processes to support the increased HH volumes for settlement, DUoS and TNUoS charging; and Others. <p>Please provide supporting rationale.</p>	
8.	<p>Provide ongoing operational costs by MPAN or per portfolio for settling all your Profile Class 1-4 customers HH.</p> <p>Please provide supporting rationale.</p>	
9.	<p>What do you believe to be the likely impact in % terms in agency costs (MO (incl. MAP and MAM), DC, and DA) to serve an MPAN as HH against the existing costs to serve as NHH, taking into account economies of scale and the performance requirements for <100kW HH meters (SP08c)?</p> <p>Please provide rationale.</p>	
10.	<p>Taking into account any increased costs, is there a benefit for a Supplier's processes in HH settlement (and HH data) for a Profile Class 1-4 customer? For example:</p>	



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No.	Question	Response
	<ul style="list-style-type: none"> • Demand Forecasting. With increased availability of HH data for these sites, demand forecasting should be more accurate; • Product Innovation: Parties should be able to construct more cost reflective tariffs with the increased resolution in metered data from HH; • 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; • Reduced Agency Costs: there is the potential for economies of scale and reduction in HH agency costs; • Settlement Cashflows: Parties should be able to plan their settlement cashflows more accurately and thereby reduce processing and financing costs. <p>Please provide details and rationale.</p>	
11.	<p>What are the benefits and other implications for your customers if settled HH?</p> <p>Please provide details.</p>	
12.	<p>What are the impacts, costs and timescales for closing down NHH Settlement.</p> <p>Please provide details</p>	
13.	<p>Do you have any other comments you wish to add?</p>	



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7.2 Questions for Supplier Agents and Meter Providers

No.	Question	Response
14.	<p>What issues do you believe there will be for agents to service an extra 29m customers as HH by the 'mandated date' for Profiles Classes 1-4?</p> <p>Please provide details and any impacts relating to the scenarios listed in Requirement 1.</p>	
15.	<p>What are your views on:</p> <ul style="list-style-type: none"> • changes in charging structures; • the economies of scale for processes or costs; • contractual relationships with customers and Suppliers; • system or data volume transfer issues • associated with an extra 29m HH metering systems <p>Please provide details.</p>	
16.	<p>What do you think are the implications for you of when a smart or Advanced meter is mandated to be settled HH:</p> <ul style="list-style-type: none"> • Scenario 1: By April 2014. This is when the DCC service is expected to go live; • Scenario 2: By April 2017. This is estimated to be 12 months after the date when 50% of smart meters have been installed; • Scenario 3: [12] months after date when at least [50]% of the customers in the existing NHH market are being settled HH (electively) via a smart or Advanced meter; • Scenario 4: By April 2018. This is estimated to be when 80% of smart meters have been installed; • Scenario 5: By 31 Dec 2019 on the projected completion of the smart meter rollout; • Scenario 6: By 31 Dec 2020, 12 months after the completion of the smart meter rollout. <p>Please provide rationale.</p>	
17.	<p>What is the impact on you of not maintaining the Profile Class Identifier for your Profile Class 1-4 customers who are now settled HH? What are the implications for your systems with regards to Profile Class component of the</p>	



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No.	Question	Response
	MPAN being '00'? Please provide supporting rationale.	
18.	What issues do you see if the settlement of customers in Profile Classes 1-4 (and PCs 5-8) was left optional (elective)? Please provide supporting rationale.	
19.	Do you have any other comments you wish to add?	



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7.3 Questions for Distribution Businesses

No.	Question	Response
20.	<p>When do you think Profile Class 1-4 customer with a smart (or Advanced) meter should be mandated to be settled HH:</p> <ul style="list-style-type: none"> • Scenario 1: By April 2014. This is when the DCC service is expected to go live; • Scenario 2: By April 2017. This is estimated to be 12 months after the date when 50% of smart meters have been installed; • Scenario 3: [12] months after date when at least [50]% of the customers in the existing NHH market are being settled HH (electively) via a smart or Advanced meter; • Scenario 4: By April 2018. This is estimated to be when 80% of smart meters have been installed; • Scenario 5: By 31 Dec 2019 on the projected completion of the smart meter rollout; • Scenario 6: By 31 Dec 2020, 12 months after the completion of the smart meter rollout; • Not at this time: It is too early in the implementation of smart metering for it to be determined; or • When a smart (or Advanced) meter is installed. <p>Please provide supporting rationale.</p> <p>All provide views on the dates and %s with regards to Scenarios 2 and 3.</p>	
21.	<p>Do you support the approach of switching off the NHH settlement processes at some date after the mandated date and agree with the approach of the Central SVA Costs of NHH settlement recovered only from Suppliers settling NHH?</p> <p>Please provide supporting rationale.</p>	
22.	<p>What do you think are the pros and cons of an alternative approach of mandating HH settlement for Profile Classes 3-4 first, then at a later date mandating Profile Classes 1-2?</p> <p>Please provide supporting rationale.</p>	
23.	<p>What issues do you see if the settlement of customers in Profile Classes 1-4 (and PCs 5-8) was left optional</p>	



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No.	Question	Response
	<p>(elective)?</p> <p>Please provide supporting rationale.</p>	
24.	<p>What is the impact on you of not maintaining the Profile Class Identifier for Profile Class 1-4 customers who are now settled HH? What are the implications for your systems with regards to Profile Class component of the MPAN being '00'?</p> <p>Please provide supporting rationale.</p>	
25.	<p>What are the additional costs/reductions and impacts if all Profile Class 1-4 customers are settled HH for each of the following scenarios:</p> <ul style="list-style-type: none"> • Scenario 1: By April 2014. This is when the DCC service is expected to go live; • Scenario 2: By April 2017. This is estimated to be 12 months after the date when 50% of smart meters have been installed; • Scenario 3: [12] months after date when at least [50]% of the customers in the existing NHH market are being settled HH (electively) via a smart or Advanced meter; • Scenario 4: By April 2018. This is estimated to be when 80% of smart meters have been installed; • Scenario 5: By 31 Dec 2019 on the projected completion of the smart meter rollout; • Scenario 6: By 31 Dec 2020, 12 months after the completion of the smart meter rollout. <p>Please break down your costs (one off and ongoing operational), timescales and impacts for:</p> <ol style="list-style-type: none"> Internal process and systems; Supplier Meter Registration Service (incl. level of transactions, constraints); DUoS Charging; and Others. <p>Please provide rationale.</p>	
26.	<p>What benefits would you consider there to be from having HH data for these 29m customers, at what frequency (e.g.</p>	



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No.	Question	Response
	monthly) and in what format (e.g. aggregated)? Please provide details.	
27.	Recognising the work being undertaken on Issue 22 by the Methodology Issue Group (on HH and NHH DUoS Charges), what other changes do you believe are necessary to the Common DUoS Charging Methodology to address HH DUoS charges for customers currently in Profile Classes 1-4 with smart or Advanced meters? Please give rationale.	
28.	Do you have any other comments you wish to add?	



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7.4 Questions for the System Operator (National Grid): TNUoS

No.	Question	Response
29.	<p>What are the costs and impacts if all Profile Class 1-4 customers are settled HH for each of the following scenarios:</p> <ul style="list-style-type: none"> • Scenario 1: By April 2014. This is when the DCC service is expected to go live; • Scenario 2: By April 2017. This is estimated to be 12 months after the date when 50% of smart meters have been installed; • Scenario 3: [12] months after date when at least [50]% of the customers in the existing NHH market are being settled HH (electively) via a smart or Advanced meter; • Scenario 4: By April 2018. This is estimated to be when 80% of smart meters have been installed; • Scenario 5: By 31 Dec 2019 on the projected completion of the smart meter rollout; • Scenario 6: By 31 Dec 2020, 12 months after the completion of the smart meter rollout. <p>Please break down your costs (one off and ongoing operational), timescales and impacts for:</p> <ul style="list-style-type: none"> a) Internal process and systems; b) Changes to TNUoS charges; and c) Others. <p>Please provide rationale.</p>	
30.	<p>Are there any changes that you believe are necessary to the TNUoS Charging methodology to address the increased 29m HH Metering Systems in the future?</p> <p>Please provide details.</p>	
31.	<p>What benefits would you consider there to be from having HH data for these 29m customers and in what format, e.g. aggregated?</p> <p>Please provide details.</p>	
32.	<p>Do you have any other comments you wish to add?</p>	



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7.5 Questions for MRASCo: Registration processes

No.	Question	Response
33.	<p>What are the costs and impacts if all Profile Class 1-4 customers are settled HH on the registration processes governed by the MRA for each of the following scenarios:</p> <ul style="list-style-type: none"> • Scenario 1: By April 2014. This is when the DCC service is expected to go live; • Scenario 2: By April 2017. This is estimated to be 12 months after the date when 50% of smart meters have been installed; • Scenario 3: [12] months after date when at least [50]% of the customers in the existing NHH market are being settled HH (electively) via a smart or Advanced meter; • Scenario 4: By April 2018. This is estimated to be when 80% of smart meters have been installed; • Scenario 5: By 31 Dec 2019 on the projected completion of the smart meter rollout; • Scenario 6: By 31 Dec 2020, 12 months after the completion of the smart meter rollout. <p>Please break down your costs (one off and ongoing operational), timescales and impacts for:</p> <ol style="list-style-type: none"> a) Internal process and systems; b) Changes to the MRA; and c) Others. <p>Please provide rationale.</p>	
34.	<p>What are your concerns or issues with a bulk CoMC process from a registration perspective used for the transition of Profile Classes 1-4 from NHH to HH settlement?</p> <p>Please provide rationale.</p>	
35.	<p>What issues do you see if the settlement of customers in Profile Classes 1-4 (and PCs 5-8) was left optional (elective)?</p> <p>Please provide supporting rationale.</p>	
36.	<p>Do you have any other comments you wish to add?</p>	



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7.6 Questions for Electralink: Data Transfer processes

No.	Question	Response
37.	<p>What are the costs and impacts if all Profile Class 1-4 customers are settled HH on the data transfer processes for each of the following scenarios:</p> <ul style="list-style-type: none"> • Scenario 1: By April 2014. This is when the DCC service is expected to go live; • Scenario 2: By April 2017. This is estimated to be 12 months after the date when 50% of smart meters have been installed; • Scenario 3: [12] months after date when at least [50]% of the customers in the existing NHH market are being settled HH (electively) via a smart or Advanced meter; • Scenario 4: By April 2018. This is estimated to be when 80% of smart meters have been installed; • Scenario 5: By 31 Dec 2019 on the projected completion of the smart meter rollout; • Scenario 6: By 31 Dec 2020, 12 months after the completion of the smart meter rollout. <p>Please break down your costs (one off and ongoing operational), timescales and impacts for:</p> <ul style="list-style-type: none"> d) Internal process and systems; e) Changes to the MRA; and f) Others. <p>Please provide rationale.</p>	
38.	<p>What are your concerns or issues with regards to increased data flows (and size) from mandatory HH settlement of Profile Classes 1-4?</p> <p>Please provide rationale.</p>	
39.	Do you have any other comments you wish to add?	



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7.7 Comments sought from other bodies/organisations

Ofgem, DECC, Consumer Focus and any other interested parties are welcome to respond to this consultation, to any of the questions in the previous parts of section 7 and any other matters associated with this Cost Benefit Analysis.



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8 **Next Steps**

Responses to the questions above are requested by 12 September 2011.

ELEXON will collate these responses and complete its own analysis on the costs benefits and impacts of mandating HH settlement for PCs 1-4. ELEXON will then produce the CBA report including the work, analyses and input from all parties. ELEXON will present the findings of the CBA to the PSRG for consideration and then a final report will be published.

9 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.'



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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. See Appendix C for list of CCCs.

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.

Measurement Class A

Is the identifier used to signify a metering system that is HH metered for a customer who was previously in Profile Class 1-2 and has a smart or advanced meter.

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.



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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.

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.



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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. Additionally customers will be able to access their information, broken down into multiple time periods. Smart data will be required to support a range of time of use tariffs.

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, and provide real-time information to an in-home display and a remote switching capacity for electricity.

Please see link for current meter design requirements published by DECC

http://www.decc.gov.uk/en/content/cms/consultations/smart_mtr_imp/smart_mtr_imp.aspx

10 References

Reference 1: ELEXON Cost Benefit Analysis on mandated HH settlement for Profile Classes 5-8. See link <http://www.elexon.co.uk/pages/industryinsights.aspx>.

Reference 2: P272 Mandatory Half Hourly Settlement for Profile Classes 5-8. See link <http://www.elexon.co.uk/Pages/P272.aspx>.

Appendix A: SVA processes for Half-Hourly and Non Half-Hourly Settlement

This section presents a high level overview of Half-Hourly (HH) and Non-Half Hourly (NHH) Settlement processes and associated costs. It presents both similarities and differences in the two processes to facilitate an understanding of the differences in cost drivers for Suppliers and Settlement. Consideration of the processes should be undertaken in identifying any perceived barriers to HH Settlement by Suppliers for customers in Profile Classes 5 to 8 in the elective HH market.

The Basic Processes

For both HH and NHH the basic processes are the same:

- The Supplier registers the customer in the Supplier Metering Registration System (SMRS);
- The Supplier appoints agents (Meter Operator (MOA), Data Collector (DC), Data Aggregator(DA));
- The MOA ensures the customer has an appropriate meter fitted;
- The DC collects data from the meter;
- The DA aggregates the data collected from the meter and provides the aggregated data to BSC Agents; and
- The BSC Agents process the data through the Imbalance Settlement processes and undertakes the outcome banking processes.

While the registration processes are fundamentally the same for both HH and NHH Settlement, there are some significant differences in the requirements for each of the subsequent stages. These are discussed further below.

Supplier Agents

The high level differences in Supplier Agent activities and processes for HH and NHH for each Agent are set out below.

Meter Operators

Meter Operators are required to fit and maintain metering systems.

Area	Non Half-Hourly	Half-Hourly
Metering	Generally cheap whole current metering, although there are some three phase systems that require current transformers (CTs) and Voltage Transformers (VTs).	HH metering is generally more expensive and requires other ancillary equipment in most cases: Remote communications,



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Area	Non Half-Hourly	Half-Hourly
	Minimum requirements are for CoP8 and CoP9 metering	CTs and VTs. Minimum requirements are for CoP10
Skill Set	Less complex metering may imply a less skilled Meter Operator could fit majority of NHH Systems.	Higher Level of competence required than for Non Half-Hourly meter operations.
Commissioning and Proving of Metering Systems	No significant requirements.	Commissioning and Proving of all HH Metering Systems. However, proving is not required for CoP10 Metering Systems.
Timescales	Less onerous than HH. e.g. 15 WD for meter fault correction.	More onerous than NHH and dependent on the CoP.

Data Collectors

Data Collectors are required to collect and validate information from metering systems.

Area	Non Half-Hourly	Half-Hourly
Data Collection	Mostly collected via an 'eye ball' reads of the registers. Some remote collection. This maybe via another third party, e.g. A Data Retriever. Costs around getting to site.	Remotely read. Costs around airtime and dialling costs.
Data Validation	Validation will be modest in most cases. However, can be onerous where issues are identified and may require further site visits.	Initial validation undertaken by dialling system. Exception reporting, investigation, remote



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Area	Non Half-Hourly	Half-Hourly
		<p>diagnostics and re-dialling may be required.</p> <p>Meter Advance Reconciliations maybe required.</p> <p>No MARs for meters with integral modems, e.g. CoP10</p>
System Requirements	NHHDCs require EAC/AA Software developed by BSCCo as well as their own systems.	Usually HHDCs use their own software.
Data Processing and Output	Output as EACs and AAs per meter register. Erroneous values need further investigation.	Output as HH data. This may be based on estimates, e.g. 'E' Flagged.

Data Aggregators

Data Aggregators are required to aggregate meter data provided by the Data Collectors.

Area	Non Half-Hourly	Half-Hourly
Aggregation Requirements	Aggregate AAs and EACs by GSP Group, Standard Settlement Configuration, Time Pattern Register and Line Loss Factor Class.	<p>Aggregate HH data by Balancing Measurement Unit Id (BMU_ID)</p> <p>The DA will also apply Line Loss Factors (LLFs).</p>
System	NHHDAAs require NHHDA Software developed by	HHDAAs would normally use



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Area	Non Half-Hourly	Half-Hourly
Requirements	BSCCo as well as their own systems.	their own systems.
Exception Reporting	D0095 reporting to Supplier on issues relating to EACs/AA and appointment anomalies.	D0235 reporting for missing, incorrect, de-energised or wrong Supplier.
Output	Supplier Purchase Matrix of Aggregated AAS and EACs (D0041)	Aggregated Half-Hour Data (D0040)

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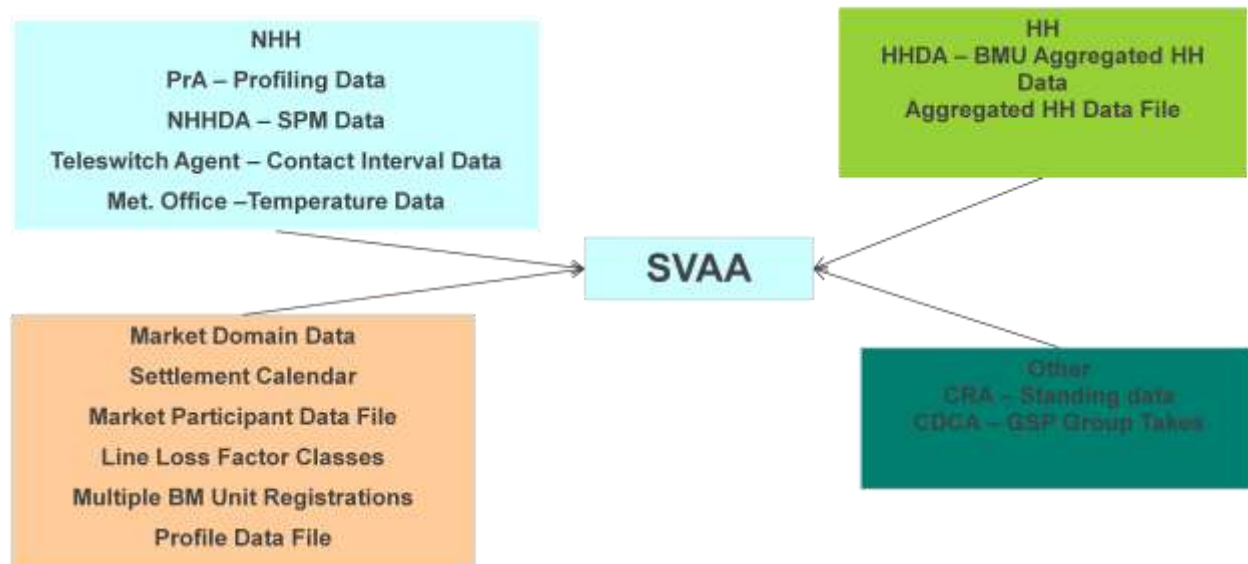
BSC Agents for Supplier Volume Allocation (SVA)

The high level differences in BSC Agent activities and processes for HH and NHH for each Agent are set out below.

Settlement Administration Agent (SAA) and the Funds Administration Agent (FAA)

The process for the Settlement Administration Agent (SAA) and the Funds Administration Agent (FAA) are the same for NHH and HH Settlement.

Data is provided to the Supplier Volume Allocation Agent (SVAA) from a number of sources, which can be split as follows:



Profile Administrator (PrA)

The PrA produces profiling data for use by the Supplier Volume Allocation Agent. Please note that default profile data is made available to HH Supplier agents as well as NHH supplier agents.

Area	Non Half-Hourly	Half-Hourly
Data Requirements	To produce Regression Coefficients and GAACs for use by the SVAA.	To produce Default Profile Coefficients for use by HHDCs.
Operational	To maintain with the help of	Not Applicable



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Requirements	Suppliers standing samples of NHH customers.	
Metering Requirements	To fit and maintain appropriate half-hourly capable metering systems for sample participants for which they are responsible.	Not Applicable
Data Collection Requirements	To remotely collect data from metering systems for which the PrA are responsible. To receive HH data direct from Suppliers.	Not Applicable
System Requirements	The PrA requires software developed by BSCCo for Data Analysis and its own systems to collect data from the metering systems.	Not Applicable
Output	Regression Coefficients and Default Profile Coefficients for loading into Market Domain Data (MDD) and SVA Systems.	



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The Teleswitch Agent

The Teleswitch Agent collects information on when Teleswitch Contacts are switched 'on' and 'off' for provision to the SVAA for NHH Settlement.

Area	Non Half-Hourly	Half-Hourly
Data Requirements	Contact Interval data by Teleswitch User and Teleswitch Group	Not Applicable
System Requirements	The Teleswitch Agent uses its own systems to interrogate the Central Teleswitch Control Unit (CTCU) that is hosted and maintained by National Grid	Not Applicable
Output	Contact Interval Data file (D0277) for use by the SVAA in Daily Profile Production	Not Applicable

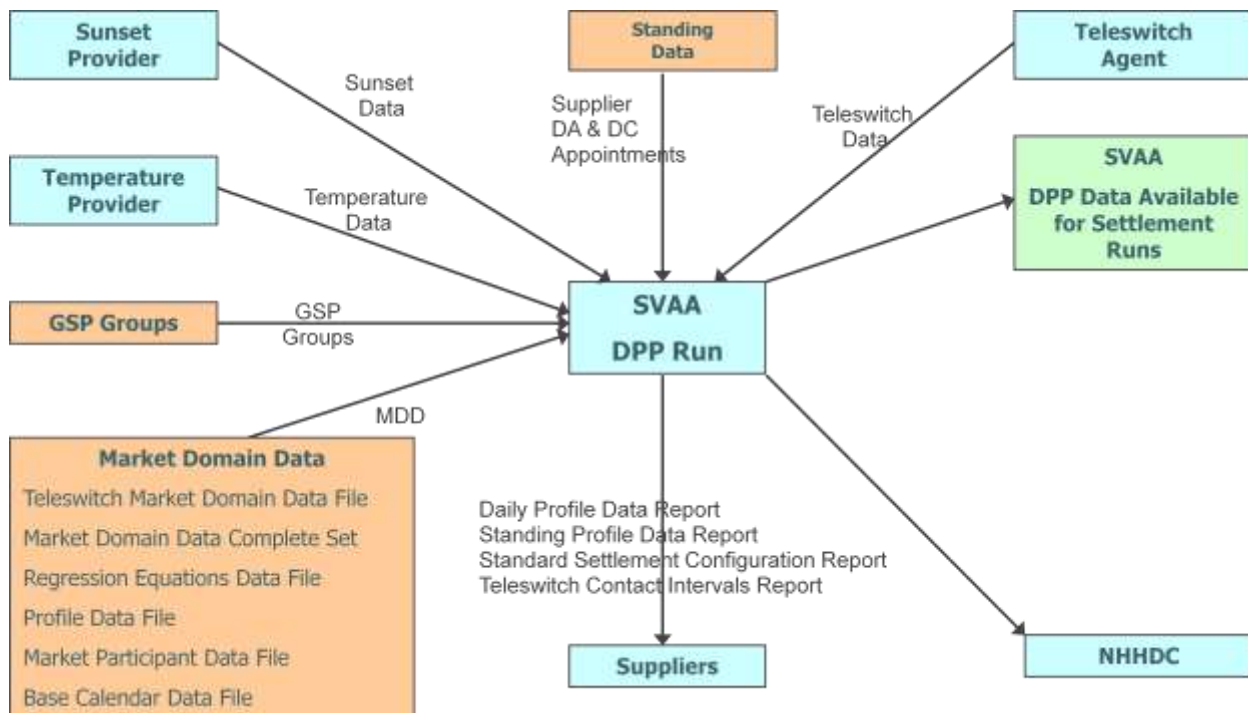
The Supplier Volume Allocation Agent

The SVAA brings together the NHH and HH data. Some of the processes such as the Daily Profile Production run are NHH Specific, as they provide data for use by NHH Data Collectors in the construction of EACs and AAs. The main data inputs and outputs of the SVAA are illustrated below.

SVAA: NHH only process - Daily Profile Production

This following diagram shows the process involved for the production of the daily profiles, which are primarily used by NHHDCs in the construction of EACs and AAs.

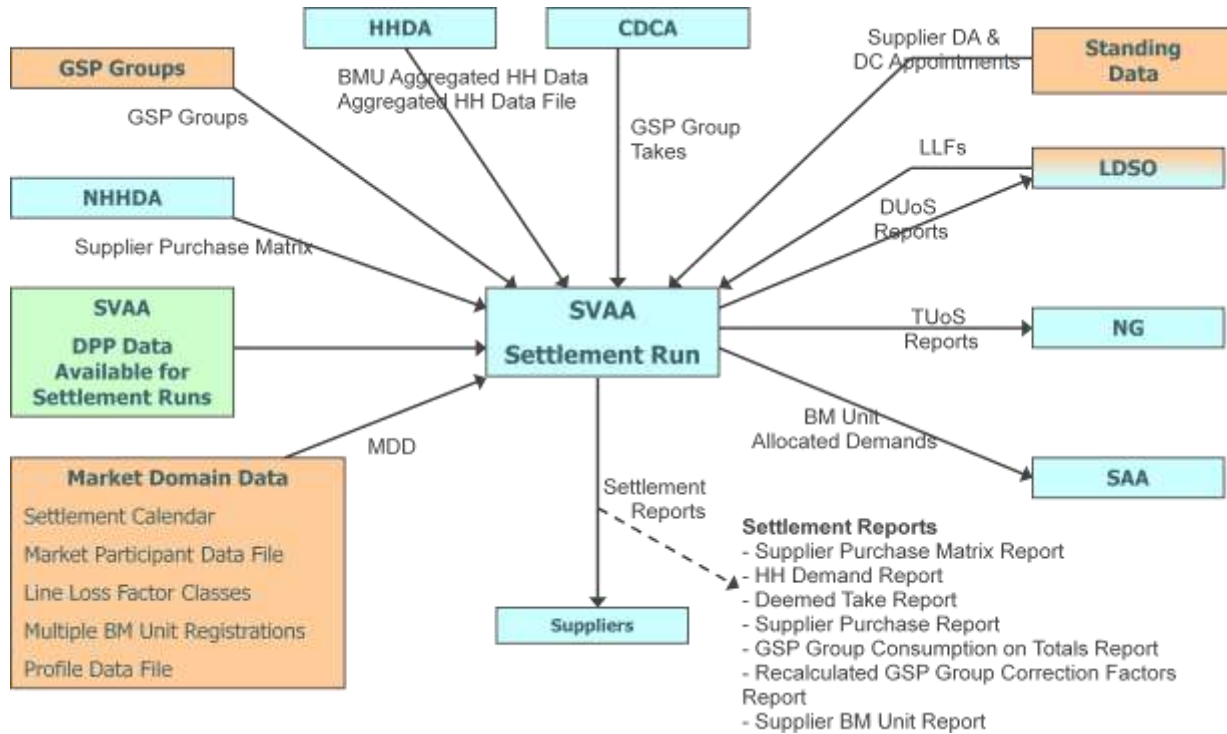
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SVA: NHH and HH processes - Settlement Run

The following diagram shows the SVA processes involved in the production of the HH BMU metered volumes for both HH and NHH meters.



In summary the main processes used for NHH settlement are; PrA, Teleswitch, EAC/AA and NHHDA software support and SVAA.

Appendix B: Current HH Data Estimation Processes: Extract from BSCP502: HH Data Collection

4.2 Data Estimation.

Data will be estimated for Import and Export Metering using one of the following data estimation methods in the order of precedence specified below and will apply equally to above and below 100kW MSs. Data will be flagged appropriately as indicated below. Alternatively, the Revenue Protection Service may advise on required adjustments. Missing Reactive Power data will also be estimated in accordance with 4.2.3 below.

When the HHDC receives information from the MOA, Revenue Protection Service, site reports or other sources concerning metered data which has been or will be collected and processed, the Meter Period Value data shall be estimated in accordance with this BSCP where the HHDC believes the data to be in error. The HHDC shall inform the Supplier where an error might affect a different Supplier or data affects the Final Reconciliation Volume Allocation Run.

The HHDC shall retain any original value collected, whether such value is processed before or after receipt of any details of invalid data from the MOA, Revenue Protection Service, site reports or other source, and any alarms set up at the Meter.

Details of all data estimations and the rationale behind using the chosen method must be recorded for Audit purposes.

The HHDC will notify the relevant Supplier and (where appropriate) the LDSO of the data estimation method in accordance with 4.2.4 below.

Data estimation shall, wherever possible, be constructed using previous actual¹⁰ Metered Data and not previously estimated data.

HHDCs should take particular care when carrying out data estimation using, or during, public holiday periods, e.g. Christmas and New Year, where abnormal consumption patterns may be experienced. Profiles from similar periods in previous years may be used where applicable and available.

HHDCs should consider local information, where available, when carrying out estimations and use appropriate **actual** historical data if this is considered to give a more accurate data estimation, e.g. when estimating consumption of energy for a building known to be a school during the month of August, the average load shape could be based on actual data for the same day of week and Settlement Periods from the previous year.

Having estimated data using one of the methods below, a report is to be produced in accordance with 4.2.4 below.

If a data estimation has been completed and submitted to the HHDA and actual 'A' flag data **OR** information leading to more accurate estimated data becomes available, this revised data shall be

¹⁰ 'Actual' data means collected Metered Data – 'A' flagged – which has successfully passed a main / check data comparison (in accordance with Appendix 4.1.7) and Maximum validation (in accordance with Appendix 4.1.6).



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notified to the Supplier and LDSO and submitted to the HHDA for use in the next Volume Allocation Run.

Where a MAR has failed, in accordance with Appendix 4.8, due to a data estimation being included in the period of reconciliation, that period of data estimation shall be re-estimated.

4.2.1 Standard Methods – Import Metering Systems

- a. Main Meter data available but check Meter data missing.

Data from main Meter used providing that data is in line with previous load shape for same day of week and Settlement Periods.

Data Flag 'A'

- b. Main Meter data missing and check Meter installed.

Data copied from the check Meter providing that data is in line with previous load shape for same day of week and Settlement Periods.

Data Flag 'A'

Note that a. and b. **do not apply** where main and check data is collected, but the data fails the main/check validation as described in Appendix 4.1.7.

- c. One Settlement Period missing or incorrect where a prime Meter register reading can be taken.

Missing or incorrect Settlement Period data calculated from the prime Meter register advance and the other actual HH data recorded for the specific period of the calculation. Note that the prime Meter register advance will not correlate to Settlement Periods.

Data Flag 'A'

- d. Two or three Settlement Periods missing or incorrect for prime Meter register or one Settlement Period missing or incorrect where a prime Meter register reading cannot be taken.

Manual values may be entered which ensure a match with real data trends.

Data Flag 'E'

- e. Meter advance available.

kWh and/or kvarh consumption calculated in the order of precedence below:

- (i) HH data constructed by using the average load shape based on **actual** Metered Data for the same day of week and Settlement Periods over the previous or following month taking into account weekends and public holidays.
- (ii) HH data constructed by using the average load shape based on **actual** Metered Data for the same day of week and Settlement Periods over the previous or following 2-3 weeks taking into account weekends and public holidays.



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- (iii) HH data constructed by using the average load shape based on **actual** Metered Data for the same day of week and Settlement Periods over the previous or following week taking into account weekends and public holidays.
- (iv) Where actual Metered Data is not available to satisfy the criteria for (i), (ii) or (iii) above, the HH data shall be constructed using the average load shape based on **actual** data for the same day of week and Settlement Periods over the nearest 4 week period to that for which a data estimation is required.
- (v) Operational data or additional information will be used to construct the load shape supplied from another source (MOA, Supplier). Information to be supplied by the Supplier to the HHDC in a format agreed by both parties.

Data Flag 'E' except in (v), where the data is automatically retrieved by the MOA via an Interrogation Unit, in which case it will have an 'A' flag.

f. Meter advance unavailable.

kWh and/or kvarh consumption calculated in the order of precedence below:

- (i) The average energy values and load shape will be constructed based on **actual** Metered Data for the same day of week and Settlement Periods over the previous or following month taking into account weekends and public holidays.
- (ii) The average energy values and load shape will be constructed based on **actual** Metered Data for the same day of week and Settlement Periods over the previous or following 2-3 weeks taking into account weekends and public holidays.
- (iii) The average energy values and load shape will be constructed based on **actual** Metered Data for the same day of week and Settlement Periods over the previous or following week taking into account weekends and public holidays.
- (iv) Where actual data is not available to satisfy the criteria for (i), (ii) or (iii) above, the average energy values and load shape will be constructed based on **actual** Metered Data for the same day of week and Settlement Periods over the nearest 4 week period to that for which a data estimation is required.
- (v) Operational data or additional information will be used to construct the load shape supplied from another source (MOA, Supplier). Information to be supplied by the Supplier to the HHDC in a format agreed by both parties.

Data Flag 'E'

g. No Meter advance, historical data, operational data or additional information available.

The HHDC will use the EAC and Profile Class Id provided by the Supplier together with the Default Period Profile Class Coefficients (DPPCCs) provided in Market Domain Data (MDD), to perform the estimation of consumption. For the avoidance of doubt, DPPCCs are defined in clock time (British Summer Time during the summer months) and therefore the estimated data based upon this method will also be in clock time.



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When estimating Reactive Energy consumption the HHDC will use the Default EAC and Default Period Profile Class Coefficients (DPPCCs) provided in Market Domain Data (MDD) in conjunction with a default power factor of 0.9 to determine missing Reactive Import values. The default power factor of 0.9 shall not be used when estimating Reactive Export values, in these instances a value of zero shall be submitted.

Data Flag 'E'

- h. No EAC or Profile Class Id available.

Where the Supplier has not provided the data specified in 'g', the HHDC will use the DPPCCs for Profile Class 6 'Non Domestic Maximum Demand Load Factor Band 20 – 30 %', and with the HH Default EAC provided in MDD, derive the HH estimates for the missing Settlement Periods.

When estimating Reactive Energy consumption the HHDC will use the procedure specified above in conjunction with a default power factor of 0.9 to derive the Reactive Import estimates for the missing Settlement Periods. The default power factor of 0.9 shall not be used when estimating Reactive Export values, in these instances a value of zero shall be submitted.

Data Flag 'E'

4.2.2 Standard Methods – Export Metering Systems

The methods described in b. to g. below may only be used where the MS has a specific channel for gross Export and no netting of Import and Export occurs at the site.

- a. Export Measurement Quantity with missing values where netting occurs at site.

The HH metered values for the period of missing data shall initially be set to zero, until such time that evidence of Export energy transfer is provided.

Data Flag 'E'

- b. Main Meter data available but check Meter data missing.

Data from main Meter used providing that data is in line with previously retrieved data for the site.

Data Flag 'A'

- c. Main Meter data missing and check Meter installed.

Data copied from the check Meter providing that data is in line with previously retrieved data for the site.

Data Flag 'A'

Note that b. and c. **do not apply** where main and check data is collected but the data fails the main / check validation, as described in Appendix 4.1.7.

- d. One Settlement Period missing or incorrect where a prime Meter register reading can be taken.



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Missing or incorrect Settlement Period data calculated from the prime Meter register advance and the other actual HH data recorded for the specific period of the calculation. Note that the prime Meter register advance will not correlate to Settlement Periods.

Data Flag 'A'

- e. Main and check Meter data missing or incorrect.

The HH metered values for the period of missing or invalid data shall be initially set to zero until generation can be calculated using f. or g. below.

Data Flag 'E'

- f. Meter advance available

Operational data or additional information will be used to construct the profile supplied from another source (MOA, Supplier). Information to be supplied by the Supplier to the HHDC in a format agreed by both parties.

Data Flag 'E' except where the data is automatically retrieved by the MOA via an Interrogation Unit, in which case it will have an 'A' flag.

- g. Meter advance unavailable

Operational data or additional information will be used to construct the profile supplied from another source (MOA, Supplier). Information to be supplied by the Supplier to the HHDC in a format agreed by both parties.

Data Flag 'E'

4.2.3 Standard Methods – Reactive Power

Standard methods 4.2.1(b) through to 4.2.1(h) are also applicable to Reactive Import and Reactive Export, and the HHDC will use these methods to provide estimates of missing Reactive Power data.

These estimation requirements will only apply where the Meter Technical Details indicate that the Meter has been configured to Record period values, but has not been possible to read these values from the Meter for one or more Settlement Periods. HHDCs are not required to (and should not) estimate Reactive Power data for Metering Systems that do not have Reactive Power channels defined in the Meter Technical Details.

The HHDC may vary the standard methods 4.2.1(b) to 4.2.1(h) to use available Active Power data in estimating Reactive Power data.

Where it is not possible to use the above methods to provide estimates of missing Reactive Power data, the HHDC shall not provide estimated data. In particular, zero estimates shall be provided only when these represent genuine estimates of the missing Reactive Power data, and not as a method of signalling that estimates could not be provided.

4.2.4 Reporting

The report identifies all MSs for which Meter period estimated data ('E' flag data only) has been used, showing the dates and Settlement Periods affected. The HHDC will additionally provide full details of



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the data estimation method used to the Supplier, and where appropriate, to the LDSO (this information may be provided by any method agreed with the Supplier and the LDSO).¹¹

¹¹ For the avoidance of doubt, the data estimation method may be provided using the D0022 Additional Information Field, or by any other method agreed between the HHDC, Supplier and LDSO (e.g. spreadsheets, emails) providing that an audit trail of such information is maintained.

Appendix C: List of Consumption Component Classes (CCC)

There are 35 CCCs as follows:

Consumption Component Class Id	Measurement Quantity Id	Data Aggregation Type	Metered/ Unmetered Indicator	Consumption Component Indicator	Actual/ Estimated Indicator	AA/EAC Indicator
6	AE	H	M	C	A	
7	AE	H	M	M	A	
8	AE	H	M	L	A	
14	AE	H	M	C	E	
15	AE	H	M	M	E	
16	AE	H	M	L	E	
32	AE	N	M	C		E
33	AE	N	M	C		A
34	AE	N	M	L		E
35	AE	N	M	L		A
1	AI	H	M	C	A	
2	AI	H	U	C	A	
3	AI	H	M	M	A	
4	AI	H	M	L	A	
5	AI	H	U	L	A	
9	AI	H	M	C	E	
10	AI	H	U	C	E	
11	AI	H	M	M	E	
12	AI	H	M	L	E	
13	AI	H	U	L	E	
17	AI	N	M	C		E
18	AI	N	M	C		A
19	AI	N	U	C		E
20	AI	N	M	L		E



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21	AI	N	M	L		A
22	AI	N	U	L		E
23	AI	H	M	C	A	
25	AI	H	M	M	A	
26	AI	H	M	L	A	
28	AI	H	M	C	E	
30	AI	H	M	M	E	
31	AI	H	M	L	E	

Key

Measurement Quantity Id: AE - Active Export; AI - Active Import

Data Aggregation Type: N - Non Half Hourly; H - Half Hourly

Metered/ Unmetered Indicator: M – Metered; U - Unmetered Supplies;

Consumption Component Indicator: C – Consumption; M - Metering Specific Losses; L - Class Specific Losses

Actual/Estimated Indicator: A – Actual; E - Estimate

AA/EAC Indicator: A – AA; E - EAC