

Margaret Coaster
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Elster Initial Response to the Smart Metering Prospectus

Dear Ms. Coaster

Elster Metering Limited welcome the opportunity to respond to the DECC and Ofgem E-Serve Prospectus for the Smart Metering Implementation Programme.

Elster Metering Limited are part of the Elster Group who operate globally as one of the largest providers of metering solutions for electricity, gas, water and heat. In the UK we have production and office facilities in Luton, Stafford, Melton Mowbray and Bromsgrove.

Elster strongly support the Prospectus documentation as a major step forward to defining the programme to implement the rollout of Smart metering for gas and electricity.

This document is the initial response for the high priority consultation points raised in the Prospectus where Ofgem have requested feedback by 28th September.

Elster will be replying separately to the following:

- 1) Smart Metering Programme - rollout information request issued 07th September for response by 28th September. This will contain sensitive information on timing subject to additional confidentiality.
- 2) Prospectus consultation points requiring feedback by 28th October. This will follow in October.

This response contains our views on each of the consultation points together with an Appendix covering a detailed assessment of the Statement of Design Requirements (also referred to as the Catalogue).

We welcome further discussion on these items and look forward to participation in the industry design phase over the next few months.

Yours sincerely

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Questions from the Main Prospectus

Consultation Questions

Prospectus Document

(*) Means Response required by 28th September 2010

Remainder required by 28th October 2010.

Chapter 2

Question 3: Do you have any comments on the proposed approach to ensuring customers have a positive experience of the smart meter rollout (including the required code of practice on installation and preventing unwelcome sales activity and upfront charging)?

Elster agree that the consumer's interests are central to the smart metering programme and the consumer will only see the benefits of cost savings if he buys into the information provided and reacts positively towards it. Encouraging all the positives regarding smart metering is key and government must play its part in this to ensure, as best it can, that factual information is provided to consumers; possibly via advertising. A bad press from early installation disasters will only hinder the long term roll-out and possibly increase those reluctant to take part.

The consumer's main interfaces with smart metering will be:

- a. via the media
- b. through their own personal experience at installation
- c. through their personal experience understanding and what it will provide from them

The areas that can be influenced by the industry and govt are (b) & (c) and hence care will be needed especially regarding the installation experience.

A positive consumer experience at this stage will reduce the number of incidents in (a) – the media. Therefore, Elster believe care must be taken in:

- (i) training of meter installers
- (ii) making the customer experience as easy as possible for the consumer – single visit!
- (iii) Providing products and information to assist the consumer in understanding what benefits the equipment will provide.

Chapter 3

Question 6: Do you have any comments on the functional requirements for the smart metering system we have set out in the Functional Requirements Catalogue?

Elster understand that the metering system requirements given in the "Prospectus" and "Statement of Design Requirements" are being discussed in greater depth by the SMDG and its appropriate sub-groups. Elster positively support this process via their trade associations BEAMA and SBGI. The Functional Requirements Catalogue in the Prospectus provides a very good start point for these discussions, and we have included an appendix providing our detailed feedback. The main points from this appendix are as follows:

IM.11 Self configuration - The Smart Metering System installation should be simple for the installer but also be secure and reliable. This will require further process design work. Data entry will be required by the installer, we would expect this to be minimised and entry should be on a field tool rather than meter as the default.



OP.3 Last Gasp - Given the likely cost to implement last gasp, inclusion of this feature should be subject to a cost benefits analysis. We do not believe the costs for this feature are in the impact assessment assumptions,

OP.4 2.6W average consumption - This is an ambitious target with current technology and could be seen to conflict with existing standards e.g. EN 50470-3:2006. We recommend this is changed to be a maximum over and above that for the average existing meter consumption.

DS.5 12 months hh data - This seems excessive for electricity and gas meters and could impact the metering system costs. We do not believe the comparisons with SD card and GByte memory devices give a suitable reference for embedded micro controlled meters. There are additional concerns on ensuring secure consumer access.

ES.10 Sag, swell and harmonics - These requirements are normally only on specialist equipment and it is unlikely the cost could be justified. ENA need to undertake this investigation similar functionality such as over and under voltage can be offered on Smart meters.

GS.4 Gas 5 second data capture - We understand this is intended for potential future analytics of gas data, in which case the data will also need some local storage and periodic transmission to enable such analysis. This will reduce the 15 year battery life target and could conflict with likely MID requirements on minimum battery life. We recommend the case for this requirement is reviewed.

GS.8 Gas 15 year battery life - This needs to be defined in a fuller usage model as the actual life will be a function of battery, quiescent current while meter is sleeping, number of wake-ups per day, HAN comms technology transmissions, as well as valve operations. It may be more economical to provide an initial 10 year battery life with a planned change for meters with a 20 year life.

IH1 IHD requirements for gas - We have 2 concerns on this for gas meter data, firstly it implies an accurate bill can be predicted but the metering system is likely to be using calorific value data in advance of that used by the billing system and secondly it suggest gas data is updated every 15 minutes, where as elsewhere it is assumed that this is 30 minutes. We believe 30 minutes should be the minimum spec for gas meter wake ups to minimise battery life.

Question 7: Do you see any issues with the proposed approach to developing technical specifications for the smart metering system?

Elster fully support the proposed process of Industry development and Ofgem facilitation. Given the wide industry interest in this, the facilitation will need a strong chair as delivery of these specifications is the critical path to metering system availability for the phased programme.

Question 16: Do you have any comments on the proposals for requiring suppliers to deliver the rollout of smart meters (including the use of targets and potential future obligations on local coordination)?

Elster support the proposals made in this section. Suppliers, whatever size, can be monitored against roll-out targets and we would suggest that targets related to Supplier customer numbers, would negate the need to differentiate between suppliers.



Chapter 4

Question 17: Do you have any comments on our implementation strategy? In particular, do you have any comments on the staged approach, with rollout starting before DCC services are available?

Elster agrees with the staged approach to the implementation strategy. Early agreement of a technical specification to meet the functional needs for smart metering equipment within the home will enable this. In turn this will provide information to the industry, especially if experience is shared, with regard to:

1. Installation techniques
2. The training of installers
3. Consumer engagement
4. Choice of HAN
5. WAN experiences

While Elster understand the perceived risk on Smart Metering technical interoperability, we are already working hard with other meter manufacturers to resolve this with strong definitions for the minimum HAN and WAN interfaces to ensure this risk is addressed and does not become an issue.

Question 18: Do you have any other suggestions on how the rollout could be brought forward? If so, do you have any evidence on how such measures would impact on the time, cost and risk associated with the programme?

Elster believe the best approach for an accelerated roll-out is the one proposed within this Prospectus by suggesting a staged implementation strategy. A concentrated effort by meter manufacturers and the SMDG members in providing the technical specs with interface information can, we feel, be a fast option to providing a start to roll-out.

Question 19: The proposed timeline set out for agreement of the technical specifications is very dependent on industry expertise. Do you think that the technical specifications can be agreed more quickly than the plan currently assumes and, if so, how?

Elster agrees there will be a great dependency on industry expertise to produce the technical specification in the time suggested especially as the functional specification is not fully finalised. Elster are working with other meter manufacturers to be able to propose interface protocols meeting the functional requirements and support the tight timeframe for the technical specifications.

Agreement on functionality and interfaces will allow meter manufacturers to design devices using their own methodology and IPR and ensure that the devices will work openly together.

The main technology risk we see for early deployment is with the HAN. Elster believe ZigBee wireless technology with the Smart Energy Profile and further application enhancements is likely to be the only technology available to meet the government timeframe. There will however be some building types where this is not appropriate and more work is required on range extensions as well as alternative technologies.

Question 20: Do you have any comments on our proposed governance and management principles or on how they can best be delivered in the context of this programme?

Elster sees the proposal as well thought out and would suggest a firm and robust approach to ensure the programme is delivered on time and to budget. However, we are concerned regarding the possible delay that may be caused due to the need for the required submission of technical specifications to EU for approval. Elster recommend that Ofgem work with BEAMA, and its sister European organisation ESMIG, to ensure that any possible delay in this area is kept to the minimum.



Supporting Document 94a/10 Consumer Protection

Response to follow before 28th October

Supporting Document 94b/10 Statement of Design Requirements

Response Required by 28th September

Chapter 3

Question 1: Should the HAN hardware be exchangeable without the need to exchange the meter?

Elster agree with the Ofgem view that a modular HAN should not be part of the minimum specification but it remains a valid option for smart meter asset owners. Elster believe there are many benefits to a modular HAN interface these need to be balanced with the cost associated with a robust modular connection, as well as the associated security to prevent tampering. HAN technologies are evolving rapidly and need to develop further for the UK market. Core metering functions, while going through a step change for smart are then expected to be stable for at least the 15 year typical life.

At this stage there is not enough data on HAN technology performance in UK homes Elster believe the best balance will be to encourage a modular HAN interface for the early phasing of the rollout but not to prescribe it as mandatory to minimise risk to the impact assessment for mass rollout. E.g by the time the DCC is established it is likely that one HAN will be used as a default for the large majority of homes so the HAN interface can be integrated. There could then be one or two variants which could either be integrated or modular depending on volumes.

Question 2: Are suitable HAN technologies available that meet the functional requirements?

Elster believe that ZigBee with its Smart Energy Application profile is closest to meeting the functional requirements for the large majority of homes. There are a number of functional gaps in the application profile particularly to support technical interoperability in certain areas e.g., Prepayment, Elster and other manufacturers are already working closely to address these. We therefore believe this will be the most appropriate technology for early rollouts. Further work will need to be undertaken for Zigbee and alternative technologies to provide HAN connectivity for buildings where there are large distances between the meters and In Home Displays.

Question 3: How can the costs of switching between different mobile networks be minimised particularly in relation to the use of SIM cards and avoiding the need change out SIMs?

This assumes the use of Mobile phone technology which we believe is the most likely WAN for pre DCC rollouts. Mobile telcos are working on options which need to be concluded as SIM replacement is not suitable for UK Smart metering.

Question 4: Do you believe that the Catalogue is complete and at the required level of detail to develop the technical specification?

Elster recognise the significant step forward in publishing the Catalogue. Inevitably there are a number of areas requiring greater clarity and some inconsistencies remain which Elster hope can be resolved via the SMDG. Elster will support the process through our representation in trade associations BEAMA and SBGI.



We have included an appendix providing our detailed feedback. The main points from this appendix are as follows:

IM.11 Self configuration - The Smart Metering System installation should be simple for the installer but also be secure and reliable. This will require further process design work. Data entry will be required by the installer, we would expect this to be minimised and entry should be on a field tool rather than meter as the default.

OP.3 Last Gasp - Given the likely cost to implement last gasp, inclusion of this feature should be subject to a cost benefits analysis. We do not believe the costs for this feature are in the impact assessment assumptions,

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DS.2 12 months hh data - This seems excessive for electricity and gas meters and could impact the metering system costs. We do not believe the comparisons with SD card and GByte memory devices give a suitable reference for embedded micro controlled meters. There are additional concerns on ensuring secure consumer access.

ES.10 Sag, swell and harmonics - These requirements are normally only on specialist equipment and it is unlike the cost could be justified. ENA need to undertake this investigation similar functionality such as over and under voltage can be offered on Smart meters.

This requires more effective definition on the data items with support from the ENA for Harmonic and frequency information.

GS.4 Gas 5 second data capture - We understand this is intended for potential future analytics of gas data, in which case the data will also need some local storage and periodic transmission to enable such analysis. This will reduce the 15 year battery life target and could conflict with likely MID requirements on minimum battery life. We recommend the case for this requirement is reviewed.

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IH1 IHD requirements for gas - We have 2 concerns on this for gas meter data, firstly it implies an accurate bill can be predicted but the metering system is likely to be using calorific value data in advance of that used by the billing system and secondly it suggest gas data is updated every 15 minutes, where as elsewhere it is assumed that this is 30 minutes. We believe 30 minutes should be the minimum spec for gas meter wake ups to minimise battery life.

Question 5: Do you agree that the additional functionalities beyond the high-level list of functional requirements are justified on a cost benefit basis?

Elster have 2 main areas of concern with the additional functionalities

1. Last Gasp - please refer to OP.4 - Last Gasp and ES.10 – Sag, swell and harmonics
2. 12 months hh data - please refer to DS.2



Question 6: Is there additional or new evidence that should cause those functional requirements that have been included or omitted to be further considered?

Elster agree with section 3.38 on the proposed omissions. For evidence on the inclusions please see the comments above for Question 4 & 5 for Last Gasp and additional memory.

Chapter 5

Question 7: Do you agree that the proposed approach to developing technical specifications will deliver the necessary technical certainty and interoperability?

Elster believe that the proposed Option 2 enabling the mandated Functional and Technical specs to be finalised by the SMDG supported by industry technical groups will provide the technical certainty and interoperability required. DECC/Ofgem must be aware that some independent work is being carried out in this area which if focussed may provide an acceptable solution. The industry is best capable at providing the solution if it is guided in the way suggested.

Question 8: Do you agree it is necessary for the programme to facilitate and provide leadership through the specification development process? Is there a need for an obligation on suppliers to co-operate with this process?

Elster believe that the programme will need to provide strong facilitation to achieve the tight timeframe. We would expect Suppliers to want to fully participate and support the process.

Question 9: Are there any particular technical issues (e.g. associated with the HAN) that could add delay to the timescales?

Assuming the work completes to the timeframe on the functional requirements Elster believe the main issues are in agreeing protocols for the WAN e.g. based on DLMS with UK market extensions and to agree technical suitability of a core HAN technology e.g. ZigBee with protocols extensions to support UK HAN requirements. As this is critical for rollout Elster are already working with other manufacturers to define this and provide inputs to support the wider industry work.

Question 10: Are there steps that could be taken which would enable the functional requirements and technical specifications to be agreed more quickly than the plan currently assumes?

Elster recognise that the proposed timeframe is already tight but it is realistic and achievable.

Agreement of the Functional Requirements assessment and draft updates can be achieved in a short timeframe with strong facilitation at the meetings by Ofgem.

The Technical specifications are the main risk area and an opportunity to have some improvements on the timeline. Elster see the key activities here to include:

Agreement of the functionality split between the components in home, meters, hub and in home display
Assessment of existing technical standards and public domain specifications which could be used
Agreement of the proposed main HAN technology,

Definition of the WAN and HAN interfaces – high level data items from Functional requirements, and then definition of WAN and HAN protocols

Elster believe the main area where this could be accelerated is for groups of industry participants e.g. manufacturers and one or more suppliers to propose key elements of this from existing or ongoing work. Elster are closely involved in such work with others and we remain hopeful that this will enable acceleration of the technical specification timescales.



Supporting Document 94c/10 In Home Display

Response required by 28th October

Supporting Document 94d/10 Communications Business Model

Response required by 28th October

Supporting Document 94e/10 Data Privacy and Security

Response required by 28th October



Response Required by 28th September

Chapter 2

Question 1: Do you have any comments on our proposed governance and management principles or on how they can best be delivered in the context of this programme?

Elster agree that the proposed governance and management principles fit the needs of this implementation. There is a need for the programme to deliver on time and to budget which calls for a strong and solid approach at all levels and with all groups involved in the design of this massive change in energy awareness.

Chapter 3

Question 2: Are there other cross-cutting activities that the programme should undertake and, if so, why?

Elster would suggest that additional cross-cutting activities need to be considered. These are:

1. Any forthcoming legislative or standards changes
2. Feed in Tariffs
3. Micro-generation
4. Other forms of renewable energy
5. Smart Grid issues

The enabling of bringing together the Gas and Electricity industry procedures to ensure simpler understanding of energy by consumers

Although Elster suggests that these activities should be added to the list, they should not in themselves delay the start of Smart meter roll-out. If it is possible to encompass and enable any of these activities every care should be taken to do so.

Chapter 5

Question 3: Do you agree with our proposal for a staged approach to implementation, with the mandated rollout of smart meters starting before the mandated use of DCC for the domestic sector?

Elster agree with the staged approach to the implementation strategy. Early agreement of a technical specification to meet the functional needs for smart metering equipment within the home will allow those suppliers who wish to move early to do so. This in turn will provide information to the industry, especially if experience is shared, with regard to:

1. Installation techniques
2. The training of installers
3. Consumer engagement
4. Choice of HAN
5. WAN experiences

While Elster understand the perceived risk on Smart Metering technical interoperability, we are already working hard with other meter manufacturers to resolve this with strong definitions for the minimum HAN and WAN interfaces to ensure this risk is addressed and does not become an issue.



Question 4: Do you have any comments on the risks we have identified for staged implementation and our proposals on how these could best be managed?

Elster feels that the risk suggesting that the smart meters rolled out in the interim, prior to the DCC establishment should be mitigated if the SMDG is able to ensure the design of the HAN & WAN interfaces in the Technical Specification are robust and a process for access management on change of Supplier is agreed in industry.

Question 5: Do you have any other suggestions as to how the rollout could be brought forward, including the work to define technical specifications, which relies on industry input?

Elster recognise that the proposed timeframe is already tight but it is realistic and achievable.

Agreement of the Functional Requirements assessment and draft updates can be achieved in a short timeframe with strong facilitation at the meetings by Ofgem.

The Technical specifications are the main risk area and an opportunity to have some improvements on the timeline. Elster see the key activities here to include:

Agreement of the functionality split between the components in home, meters, hub and in home display,

Assessment of existing technical standards and public domain specifications which could be used

Agreement of the proposed main HAN technology,

Definition of the WAN and HAN interfaces – high level data items from Functional requirements, and then definition of WAN and HAN protocols

Beyond the technical specifications there needs to be pragmatic supplier agreement on interim arrangements for Change of supplier so the interim arrangements do not require full implementation of the “Competitive model”. That was discussed as an alternative to the DCC in 2008/9. This is required to ensure continuity in secure head end access to meters. E.g. this could be by the first supplier providing a base level service for other suppliers (similar to PPMIP today).

Question 6: Do you agree with our planning assumption that a period of six months will be needed between the date when supply licence obligations mandating rollout are implemented and the date when they take effect?

This is a question aimed at Energy Suppliers

Question 7: Do you have any comments on the activities, assumptions, timings and dependencies presented in the high-level implementation plan?

Elster agree in general terms with the activities, assumptions, timings and dependencies and would add as follows:

1. The ramp up period for Suppliers is likely to also be required for meter manufacturers to attain peak output of the required meters.
2. There is no mention of recruitment and training for meter installers and the possible need for some form of licensing/standards/code of practice for those approved to carry out the more complex job of installing dual fuel meter sets with communications

Question 8: Do you have any comments on the outputs identified for each of the phases of the programme?

Elster agree with the output identified for each of the programme phases.

Response Required by 28th September

Chapter 2

Question 1: Do you believe that the proposed approach provides the right balance between supplier certainty and flexibility to ensure the successful rollout of smart meters? If not, how should this balance be addressed?

Elster support the proposed approach which provides a balance to meet the market needs.

Question 2: Would the same approach be appropriate for the non-domestic sector as for the domestic sector?

Elster support the current proposal that 'advanced meters' installed into non-domestic sector will be equally applicable into the future and there will be no reason to remove this asset or change its method of data collection. These customers have larger energy consumption and therefore should be offered their usage information from their supplier without the need for an IHD.

Obviously the approach to non-domestics with single phase 100 amp or U6 meters would have to be the same for meters that have come to the end of their certified or policy life. In this case the smart equipment fitted to replace should be the same as for domestic customers except the IHD would not be mandated. Not to do so would miss an opportunity to encourage non-domestic customers to reduce their energy consumption save costs and reduce carbon emissions. Data from suppliers to show consumers without IHDs should we feel be mandated otherwise an opportunity is lost.

For 3 phase supplies or those above 100 amps per phase then advanced metering is mandated to be fitted and these will be B2B contracts. Never the less usage information from Suppliers to Consumers should be mandated.

Question 3: Is there a case for special arrangements for smaller suppliers?

Elster believe this is an issue for Smaller Suppliers, consumer groups and the regulator.

Chapter 3

Question 4: What is the best way to promote consumer engagement in smart metering? As part of broader efforts, do you believe that a national awareness campaign should be established for smart metering? If so, what do you believe should be its scope and what would be the best way to deliver it?

Elster believe that some form of national and local awareness campaigns will be required to achieve the required customer engagement to deliver the assumed install rates and the overall benefits.

Question 5: How should a code of practice on providing customer information and support be developed and what mechanisms should be in place for updating it over time?

Elster believe this code of practice needs to be developed with Energy Suppliers, their installation agents, Consumer groups, local authorities and associated trade bodies including BEAMA and SBGI.



Chapter 4

Question 6: Do you agree with the proposed obligation on suppliers to take all reasonable steps to install smart meters for their customers? How should a completed installation be defined?

Elster believe that there should be an obligation on suppliers as without this the overall benefits are unlikely to be delivered.

From our experience in pilots we recommend the followed to define a completed installation:

- Comms hub and electricity meters installed (or for gas only comms hub installed)
- Comms hub registered with head end / DCC
- Gas meter installed where required
- IHD installed where required
- HAN devices (gas and IHD) authorised, HAN established
- Meter and IHD comms confirmed end to end Head end/DCC to/from device
- Consumer instruction provided for basic use of IHD,
- Manuals and contact information provided to customer

Question 7: Do you think that there is a need for interim targets and, if so, at what frequency should they be set?

Elster believe that a programme of this nature should have interim targets set. We understand that previously Ofgem have used quarterly reporting in programmes such as transferring Token to Key meters and this would appear appropriate.

Question 8: Do you have any views on the form these targets should take and whether they should apply to all suppliers?

Elster believe this is an issue for Energy Suppliers, consumer groups and the regulator.

Question 9: What rate of installation of smart meters is achievable and what implications would this have?

Installation Capability:

Elster understand the UK has historically been able to sustain installation peak installation levels of 3m homes per year and there is no reason to suspect that this could not be achieved with smart meters. Practically, however, the UK is currently installing at approximately 2m homes per year (total 3m meters).

Elster believe that the industry is entering a period where the future demands of the smart roll out may conflict with the current cutting back of installation workforces taking place as suppliers sweat assets and reduce fit rates in the run in to smart. DECC and Ofgem need to consider this aspect carefully in planning the lead in to smart – ensuring the period between 2010 and 2013 does not become an installation wasteland will be vital if the roll out is not to be limited by major resource and cost limitations

Elster will respond separately to the request for information from manufacturers on accelerating the rollout.



Chapter 5

Question 10: Do you have any evidence to show that there are benefits or challenges in prioritising particular consumer groups or meter types?

Elster believe this is mainly an issue for Energy Suppliers, consumer groups and the regulator. We believe Energy Suppliers are likely to have a strong business case to prioritise new Prepay customers nationally otherwise they will have to fit an expensive dumb Prepay meter that could become a stranded asset. We also believe that based on the Prospectus proposals for sites where there are 2 suppliers, there are likely to be delays to smart gas installations, as energy suppliers target dual fuel sites and then electricity.

Chapter 6

Question 11: Do you agree with our proposed approach to requiring suppliers to report on progress with the smart meter rollout? What information should suppliers be obliged to report and how frequently?

While this is mainly an issue for Energy Suppliers, consumer groups and the regulator, we agree that this is a sensible approach. As a minimum, suppliers should report at least half yearly on basic statistics to show number, nature (DF/SF, PP, customer option or meter replacement) and location type of successful installations.

Chapter 7

Question 12: Do you agree that there is already adequate protection in place dealing with onsite security or are there specific aspects that are not adequately addressed?

Elster believe this is an issue for Energy Suppliers, consumer groups and the regulator based on previous consumer site visit programmes.

Question 13: Do you agree with our proposal to require suppliers to develop a code of practice around the installation process? Are there any other aspects that should be included in this code of practice?

Elster believe this code of practice will be required to ensure consistency in the early visits and to avoid bad press affecting and slowing the programme.



Supporting Document 94h/10 Regulatory and Commercial Framework

Response required by 28th October

Supporting Document 94i/10 Non Domestic Sector

Response required by 28th October

APPENDIX A - Detailed Assessment of 'Statement of Design Requirements'



IM.1	Fit in existing meter locations	Clearly it is highly desirable that the smart meter installation will fit in the large majority of existing meter locations. However it should be recognised that for electricity a smart meter has a lot more functionality than an existing electricity meter and therefore is a larger size. Fitting the communication module either local to the meter or as a separate unit will also increase the size of the installation.
IM11	The smart metering system shall be self configuring	The words self configuring are open to interpretation and we need installations to be secure which will require data exchanges to and from head end systems. We recommend this is updated to state that the installation process shall be simple and secure with minimal or no manual data entry on the meters.
OP.3	Last Gasp capability	Given the cost to implement this feature which we do not believe is included in the impact assessment assumptions, inclusion of this feature should be subject to a cost benefits analysis.
OP.4	Combined average consumption of the smart metering system shall be 2.6W	This is an ambitious target with current technology and could be seen to conflict with existing standards e.g. EN 50470-3:2006. We recommend this is changed to be a maximum burden above that for the average existing meter consumption.
OP.5	Accuracy of the clock within 20s	This needs to state the period over which this accuracy is monitored, suggest 20 days in line with current CoPs.
DS.2	Store 12m of half hour data	<p>This seems excessive for the electricity and gas meters and could impact the metering system costs. If so it should be questioned with consumer groups requesting the data. We do not believe comparisons with SD card GByte memory devices are a suitable price reference point for memory costs in meters. Requirements for 12 months hh data may be the trip requiring upgrades of a processor or to additional external memory chips for core metering electronics.</p> <p>We have additional concerns on how the consumer will access this data securely.</p> <p>If this feature is to be included then we recommend it is stated as Import kWh only for electricity. For Gas it would make more sense for the requirement to be a data buffer on the WAN hub to ensure this is accessible for consumers</p>

DS.7	To cater for persons with disabilities	This should be provided as special variants of the smart meter or preferably the IHD otherwise it is likely to have significant effect on the cost.
DS.8	Cater for Welsh Language	Comment as DS.7
PC.6	Store 3 Months Prepay data	We believe this could be better defined and the storage implications simplified as say the last 5 Prepay topups and the last 10 debt collections.
PC.7	Store data for the last 3 months of information relevant for Settlement & billing	A clear definition of what data is to be stored needs to be added.
PC.9	48 configurable time of use periods.	This refers to CoP 10 which actually has 8 time of use registers, therefore we believe the 48 must refer to the half hour values that are already defined in ES.6, 7, 8, 9
ES.6, 7, 8, 9	Storage of half hour data	Period of storage need to be defined.
ES.10	Sag & swell information	This will be defined as an over voltage & under voltage
ES.10	Harmonics	Harmonic measurement is a specialist process and would not normally be available on a domestic meter.
GS.1	Local storage of calibration data	Change "calibration" data to kWh energy calculation data
GS.3	48 wake up periods	Add statement that this will normally be half hour aligned for potential TOU tariffs.
GS.4	5 second capture of gas consumption	We understand this is intended for potential future analytics of gas data, in which case the data will also need some local storage and periodic transmission to enable such analysis. This will reduce the 15 year battery life target and could conflict with likely MID requirements on minimum battery life. We recommend the case for this requirement is reviewed.
GS.8	15 year battery life	We recommend a review of this as it could be more cost effective to provide meters with a 10 or 12 year battery life and then have a planned change.

SP 1-16	Security and Privacy	At a high level these requirements are fine, however they will need tighter definition jointly with both the government and meter smart metering system security experts.
HA.12	HAN bridging	We recommend this requirement is closely linked with the security requirements to ensure it does not create a weak point for attack.
IH.1	IHD requirements for accurate account balance and 15 minute gas updates	<p>Firstly the word accurate could be misleading for gas as there will inevitably be small billing differences due to the metering system using slightly different CV values to those available at the end of the billing cycle.</p> <p>Secondly we believe the 15 minutes should be changed to 30minutes as per the gas requirements for long battery life and 48 half hourly wakeups.</p>