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Elster Response to DECC Smart Metering Implementation Programme Consultation October 2011

Dear Sir / Madam

Elster Metering Limited welcome the opportunity to respond to the DECC Smart Metering Implementation Programme Consultation.

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.

The consultation questions have been discussed and our views expressed. An assessment of the IDTS document relating to the consultation questions 25 and 26 has been included with our response.

We are look forward to further discussions on these responses.

Digest of consultation questions:

1.

The Government is seeking new evidence and views on the impacts of specifying a completion date that is in the earlier part of 2019.

This is mainly an issue for Energy Suppliers and their metering operations. As a manufacturer Elster can support this target.

2.

Do you think the licence conditions (AA1-2) as drafted effectively underpin the policy intention to complete roll-out of Smart Metering Equipment by a specified date? Are there any areas where you consider further clarification is necessary? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

3.

Do you agree that the licence conditions as drafted effectively underpin the policy intention to deliver Smart Metering Equipment with the functionality and interoperability required to meet the business case? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

4.

Do you agree that Smart Metering Equipment should be compliant with the SMETS extant at the time of installation and that it should continue to be compliant with that version of the SMETS through the operational life of the equipment? Please explain your reasoning.

Yes the smart metering equipment will need to be compliant with SMETS at the time of its certification and manufacture prior to installation. Note: there will need to be a time window here to support the certification process, manufacturing build and logistics management of goods prior to installation.

The meters may be firmware upgradeable for changes in SMETS where this is needed to support the Energy Supplier or Network requirements, but we should not insist on compliance to new SMETS versions where there are hardware impacts, except in exceptional circumstances.

5.

Do you agree that in some exceptional circumstances suppliers should be required to retrofit Smart Metering Equipment that has already been installed? Please explain your reasoning.

Yes but this will depend on appraisal of the exceptional circumstances and the associated commercial impacts. E.g. if it's for network benefits who will pay for the upgrade exercise?

Clauses 50-52 define the meters that might be subject to this requirement - so industry should be able to assess their potential £ exposure risk under the "new & replacement" obligation, and advise government accordingly. Any additional deployment should be at the suppliers own risk.

It is clear, therefore, that government must put a system in place for controlling the specification, such that the costs of a change that may require meter replacement is fully considered as part of the change control process.

6.

Do you think that the licence conditions (AA3-6) as drafted effectively underpin the policy intention for the new and replacement installation of Smart Metering Equipment? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

7.

What period of notice do you think would be appropriate before the new and replacement obligation comes into effect? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

8.

What contribution do you think the interoperability licence condition as drafted could play in ensuring that suppliers work together to ensure Smart Metering Equipment is interoperable? Please explain your reasoning.

The intention should be to ensure Energy Suppliers align on the supporting technology and specifications where these are beyond the SMETS. E.g short list of SM HAN and preferred technology for SM HAN where this is functional within the household, agreement on checks for SM HAN suitability for the whole house even if it's only initially being fitted for 1 fuel.

We assume application layer will be in scope for SMETS but working together with industry protocol groups to ensure the preferred application protocols are developed to meet the requirements in the SMETS (e.g via SSWG).

9.

Do you think the licence conditions as drafted effectively underpin the policy intention to ensure Smart Metering Equipment is interoperable? Please explain your reasoning?

This is primarily for Energy Suppliers to respond.

As a member of SSWG, Beama and SBGI, Elster would like to support further work assessing how technical and commercial interoperability can be achieved for both foundation and DCC rollout phases.

10.

What role could a dispute resolution mechanism have a role in ensuring interoperability? What key features should such a mechanism have?

Elster believe that full interoperability is likely to evolve during foundation phase, as the interface specifications are agreed and completed. There will then be work to get new data objects in these GB companion specifications approved through the relevant standards bodies. In parallel, test specifications can be started to provide common reference points for manufacturers and a full test assurance process can follow. The target should be to ensure this is in place for the "enduring" phase.

The governance around conformance to specifications is critical to this. Ultimately we expect energy suppliers to procure to SMETS plus their own additional specification preferences. The core to interoperability will be determined by the physical interfaces and the associated application protocols. Elster recognise that this is critical to successful rollout and hence are working with other manufacturers in SSWG to minimise the associated risks.

Elster would welcome further dialogue with DECC to discuss this, considering the work by the Interoperability Test working group as well as ERA and Energy Suppliers.

11.

For the smaller non-domestic sector do you agree that where there is a Current Transformer meter then suppliers should be required to install an advanced rather than Smart Metering Equipment? Please explain your reasoning.

Elster agree that where CT operated meters are installed that it should be required to install advanced meters. Advanced meters are already available and the data collection systems are already in place to collect the data. The installation of this type of meter will allow much the data and functionality that is required from „ Smart Metering Equipment“ to be achieved the key area that will not be achieved is

the disconnection functionality as it is not practical to implement this on a CT operated meter. Due to the low numbers involved it is unlikely to be economic to offer a CT version of the smart metering equipment. In addition the provision of an IHD for CT metering installations is not likely to be appropriate. Commercial solutions for non domestic energy management have been available for some time and this is already a successful competitive market.

12.

Do you think that the licence conditions as drafted effectively underpin the policy intention for Current Transformer meters? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

13.

Do you think under the new and replacement obligation gas suppliers should be given the option to wait for the installation of electricity Smart Metering Equipment before installing the gas Smart Metering Equipment? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

14.

Do you think there are any other barriers to gas Smart Metering Equipment being installed before electricity Smart Metering Equipment? Please explain your reasoning.

This is primarily for Energy Suppliers to respond, however whilst Elster support the technical capability for this, we do have some concerns on how a stand alone communications hub can be powered from the network side of the mains for gas first installs with the current industry codes.

15.

What do you think the implications would be of extending the new and replacement obligations to the licences of other relevant parties in relation to installing Smart Metering Equipment in new developments without the involvement of a supplier? Do you think mechanisms other than licence conditions should be considered to achieve the policy objective? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

16.

Do you think the roll-out of Smart Metering Equipment has any specific implications for the provision of emergency metering services? Please explain your reasoning.

No comment, this is for Energy Suppliers and their metering agents to respond.

17.

What period of notice do you think would be appropriate before the obligation to provide an IHD comes into effect? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

18.

Would the consumer changing their supplier raise any particular issues with regard to the approach set out for the provision of IHDs? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

19.

Do you think the licence conditions as drafted effectively underpin the policy intentions set out for the provision of IHDs to domestic consumers? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

20.

Do you agree that the Standard Licence Conditions identified above require consequential changes in light of the roll-out licence conditions? Do you agree with the Government's proposed approach? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

21.

Do you think there are any other consequential changes to existing licence conditions needed in order to make the proposed roll-out obligations work as intended? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

22.

Do you think there are any consequential changes to existing legislation needed in order to make the proposed roll-out obligations work correctly? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

23.

Do you think there are any consequential changes to existing codes needed in order to make the proposed roll-out obligations work correctly? Please explain your reasoning.

No comment, this is for Energy Suppliers to respond.

24.

Do you think that there are other requirements that the Government should adopt in the SMETS? Please explain your reasoning.

Elster believe the core requirements from the IDTS and, where directly related, the industry supporting documents should form the basis for the SMETS. These will also need to take into account:

- Outputs from the business process work in the DCG groups e.g. for end to end messaging
- Resolution of the communications hub modularity issues
- Assessment of DCC to communications hub access (Push Pull)
- Updates to the security requirements
- Further work on the requirements for hand held terminals (HHTs)
- Further inputs from industry to ensure the data modelling is more closely aligned with the preferred application protocols to avoid excessive rewriting of protocol standards to fit the GB model

For the latter point, Elster would encourage DECC to work with industry groups already developing specifications for these interfaces in the application protocols referenced in the IDTS. Elster are one of the founding members of SSWG. We are making good progress to achieve GB companion specifications within DLMS and SEP1.X referencing which existing standard data objects are required and defining additional objects where needed to meet the IDTS requirements.

25.

Do you agree that all the requirements recommended in the IDTS should be adopted by the Government in the SMETS? Please explain your reasoning.

Yes we believe a lot of work has been done by industry experts in the IDTS. The IDTS is still a raw document in a number of aspects and the following should be addressed in generation of the SMETS:

- Check for requirements that may have become over specified in the requirements by industry committee process. There appear to be a small number which could significantly impact development time and delay delivery of compliant interoperable equipment. E.g. some of the prepay options and configurability especially the debt collection options which should not be required in a communicating smart system.
- As described in the answer to Q24, carry out an exercise to assess the data model with the preferred application protocols to avoid excessive rewriting of protocol standards to fit the GB model. This should include assessment by experts within SSWG which has already initiated this work for DLMS and SEP1.x.
- Ensure requirements are not repeated in other related but separate requirements.
- Provide clear identification of the degree by which the requirement affects each device in the SMS. The architecture supporting document holds a reference for this which now needs to be carried forward into the detailed ESoDR requirements in the IDTS.
- Verify that network requirements added in during the working groups and hot-house do have a reasonable business case to justify inclusion in the SMETS.
- Further assess the DCC responsibilities with respect to access control. There are a few cases where access control is included in metering devices prioritising between energy supplier and networks. Elster believe it would be simpler, more secure and more reliable to carry out this prioritisation at the DCC.
- Full editorial review and alignment of detail across requirements.

Elster have included an assessment of the IDTS attached to this consultation: This identifies sections as:

- “ Major” where we believe changes are required to the IDTS to clarify the requirements so they can be understood by manufacturers, in some cases expand the requirement detail and in some cases simplify to ensure the core requirement can be realised without delaying the programme and achieving technical interoperability.
- “ Minor” where there is further editing work required e.g, removing repeated requirements and clarifying sub-requirements.

26.

Do you agree that the security requirements recommended in the IDTS are proportionate to the level of risk that the End-to-end Smart Metering System faces? Please explain your reasoning.

Elster have provided an assessment of the security requirements in the IDTS in our attached assessment of the overall IDTS associated with question 25.

Elster believe the security requirements in the main are appropriate to the level of risk but that DECC should focus on the core high level requirements. We have some concerns that the IDTS proposes details that will cause some problems for manufacturers and we propose that the determination of appropriate security mechanisms should be done jointly with Industry group work on selection of the appropriate HAN and WAN application profiles. Our views on this are expanded in the answers to questions 58 to 61.

Elster agree that the cryptographic cipher functions need to conform to a standard (e.g. FIPS), however the specification, as written, might be interpreted to require additional hardware security modules which will add cost and potential delay to the programme. It is preferable that the cryptographic algorithms for the GB solution conform to standards within the preferred application protocol and we believe the option should remain for these to be implemented in firmware inside physically sealed devices. We have further details on this in the answers to questions 58 - 61.

27.

Do you agree that the process outlined above is a suitable way forward to develop the SMETS? Please explain your reasoning.

Elster support work along the lines of the example shown but would urge consideration of the answers to questions 24, 25, 26, 27 above.

We believe DECC should take on a thorough editorial review to ensure the IDTS defines the core requirements defining the “ what” . We need to filter out repeated requirements and some of the over-

complex options that have crept in the committee work developing the IDTS.

Manufacturer input is required by DECC in the ongoing review work to ensure:

- The specifications are clearly defined, testable and can be realised without adding cost
- The specifications are not gold plated with options delaying implementation and interoperability
- The specifications do not define detail that limits future innovation

28.

Do you think that the SMETS should ultimately be governed as part of the Smart Energy Code? What alternative arrangements could be adopted for the ongoing governance of the SMETS? Please explain your reasoning.

Governance of the SMETS is not straightforward to achieve. A requirement that suppliers use SMETS - compliant equipment can be achieved by Supplier Licence Condition; however, managing, maintaining, and providing guidance on the SMETS will require a technical panel with representation from across industry. A past example of this has been the relationship between MAMCoP and the standards organisations, IGEM, BSI, etc; and it may be that a similar structure is best suited to the SMETS.

Any governance of the SMETS must be dual fuel.

29.

What unit manufacturing cost reduction do you think can be achieved for Smart Metering Equipment over the next 20 years? Please explain your reasoning. Please also provide any other comments (accompanied by evidence) on the estimated costs of the Smart Metering Equipment as set out in the Impact Assessment.

Elster will submit a separate confidential document covering these issues.

30.

Do you agree that the Government should include a requirement for a Communications Hub in the SMETS? Please explain your reasoning.

Elster agree with the industry work in this area and believe a Communications Hub is needed to:

- 1) Enable and support gas first as an option (external communications hub option)
- 2) Ensure logical separation of access to gas and electricity data to avoid issues on independent supply of electricity and gas to a property
- 3) Optimise design for cost with power supplies to different WAN technologies
- 4) Enable HAN technology options for difficult properties and also evolving technologies
- 5) Simplify compliance with the security requirements which need strongly linked WAN and HAN access controls
- 6) Extend the life of metering assets as communication technologies evolve
- 7) Support standardisation and inter-operability testing

We do have some concerns on the numbers shown in Table 4. Industry group discussions proposed a range of values for these components. The true cost will depend on technologies however at this stage it does not appear that DECC have conducted a further validation of these costs.

However whilst Elster support the use of an external Communications Hub we believe that the intimate hub will offer a more cost effective solution and a simpler installation process for Electricity only and Dual Fuel installations.

31.

Do you agree with the estimated costs and benefits for outage detection and the Government proposal to require the Communications Hub to include the equipment necessary to provide electricity outage detection? Please explain your reasoning.

Elster believe the £1 figure for costs is optimistic. The actual figure will depend on the WAN communications it is supporting; the highest cost would be associated with GPRS. The additional requirements to monitor the supply for 3 minutes before sending an alarm will add further to the original cost estimates. Also the IDTS proposes that as part of last gasp, the communications hub should check connection with the electricity meter and this could increase costs further.

The communications hub is best positioned to detect an outage and send a notification. However the electric meter is best positioned to detect the loss of power being the measuring device. The loss of power indication from the electric meter will start the process of detection of a power outage within the communications hub.

The commercial viability will need to include assessment of the cost and issues from a large number of communications alarms arising from a simultaneous power outage.

Elster believe that dependant on the network solution other mechanisms could be employed to detect power outage and these should be investigated further before mandating Last Gasp.

Elster welcome clause 120 that this is only required for DCC rollout. Consideration needs to be given to ensure this does not result in asset standing from foundation phase.

32.

Do you agree that the DCC Communication Service Providers should specify the requirements for outage detection as part of their general role in specifying the WAN technology? Please explain your reasoning

The “ what” part of the requirement really needs to be defined by the procurers and users of the service - Energy Suppliers and Energy Networks. The “ how” part of the requirement and assessment of commercial viability should be in the DCC communication service partners domain.

33.

Do you think that the Communications Hub should also have the functionality to send a communication to the DCC when power is restored? Please explain your reasoning.

On a Meter / Communications Hub this is a standard event that is then configurable as an alarm with immediate report or as part of the next scheduled communications session.

This could allow correlation to happen to between premises where power has been restored and those that have not responded, so remedial action can be taken to identify those premises which have been identified as still off power.

It should be noted for both notification of power outage and power restore that many meters will try to respond at a very similar time and therefore consideration has to be taken to ensure all the messages are received accurately if this is to try and identify individual outages.

34.

Do you agree with the Government’s proposal that fully integrated electricity meters and Communications Hubs will not comply with the SMETS? Please explain your reasoning.

Elster agree that initially these would not comply with the reasons set out in question 30. However we believe intimate communications hubs should be compliant along with external communications hubs to provide the most cost effective choice for Energy Suppliers and Installers. We note that the two most favourable options in table 5 on the cost comparison show the fully integrated and intimate communications hub to have the highest NPVs. Therefore it would be appropriate to review this

requirement for integrated communications hub when there is progress with the rollout and more knowledge on the term and performance of WAN and HAN technologies.

35.

Do you think the Smart Metering Implementation Programme objectives would be better met by:

- a. Using the SMETS to mandate a separate Communications Hub with a fixed WAN transceiver? Or
- b. Giving suppliers flexibility over options for configuration of the Communications Hub?

Please explain your reasoning.

Elster support the positions from the Architecture Group / Hot House discussions:

Elster believe that Energy Suppliers should have the choice of technology to fit for the communications hub to be stand alone or intimate to the electricity meter. We believe the Foundation and Mandated DCC needs both options to maximise the rollout volumes and optimise the installations for electricity only, gas only and dual fuel. This also provides flexibility for whether the meter cupboard is suitable for an electricity meter with intimate hub or smaller base meter with a separate hub etc.

Elster note that a number of Energy Suppliers have expressed preferences for both architectures and that the intimate communications hub is more cost effective based on the revised impact assessment.

Some concerns have been expressed that the lack of standardisation progress for intimate communications hubs could cause field issues. We understand this was reviewed in the Hot House and solutions are in the resultant Architecture supporting document.

- 1) For intimate communications hubs to be compliant they should be field upgradeable so the installation can be switched to a mode to work with a replacement stand alone communications hub.
- 2) Where an alternative HAN transceiver is needed for problem sites the communications hub should also support the standard SM HAN transceiver for interoperability with the field staff' s HHT.
- 3) Elster support further work on standardisation of the communications hub to meter interface the ERA are proposing. We have some concerns on the time to develop such a standard so this should be in parallel with using existing available interfaces. The time scale proposed should enable standardisation for post DCC roll out but the value and experience gained by significant volume deployment of the intimate hub variant during foundation should not be missed and will help shape mass roll out deployment models.

While Elster understand the reasons to look at WAN modules within communications hubs, we believe this is only a really viable option if there is an open standard interface that all communications providers could agree on. Given the range of technologies, power considerations and antenna interfaces this is not likely in the short term.

36.

Do you agree there should be no restrictions on the HAN standards adopted by suppliers, provided they are available as a European (CEN, CENELEC or ETSI) or International (IEC or ISO) standard? Please provide evidence to support your position.

For technical interoperability we need the main SM HAN to be common across the deployment unless limited by problem sites. We would therefore like to see agreement by Energy Suppliers to work

together for common solutions for Foundation, the results from this can then determine whether SMETS should be updated to define the preferred and alternative SM HAN technologies.

Elster do not believe there is such a technology that is currently an approved standard as defined above for the network and application layers that will meet all of the GB requirements across all the property types. Elster through SSWG is undertaking to solve these issues to ensure the most extensive interoperability capability is achieved. We believe that ZigBee with Smart Energy profile 1.x is the strongest candidate technology available today. We would recommend that DECC and SSWG work very closely on this issue.

The HAN working group assessed this and they proposed that there should be a timeframe for standardisation e.g. demonstrate that the proposed HAN is formally identified as a work item by a European or International Standards Organisation.

Additionally the HAN working group proposed to use the European definition of openness in the shorter term:

- All stakeholders have the same possibility of contributing to the development of the specification, and public review is part of the decision-making process
- The specification is available for everybody to study
- Intellectual property rights related to the specification are licensed on Fair, Reasonable and Non-Discriminatory (FRAND) terms, or on a royalty-free basis in a way that allows implementation in both proprietary and open source software

37.

The IDTS has recommended that all standards should be recognised or be in the process of being recognised by 31 December 2014; do you agree with this recommendation? Please explain your reasoning.

Yes Elster support this. Smart Metering standardisation is rapidly advancing as is expected with the markets reacting to the US and EU regulatory initiatives.

This is a suitable timeframe for assessing appropriate standards in HAN technologies. In the shorter term we agree with the proposals from the HAN working group to use the European definition of openness repeated above.

Elster are supporting BSI work in this area. A new work item is being raised into CEN TC 294 to commence the introduction of the Smart Energy profile 1.x into the suite of applicable standards. This is fully supported by the ZigBee Alliance who have now confirmed liaisons with CEN, CENELEC and ETSI.

38.

Do you think that regulatory obligations are needed to underpin a systematic approach to testing of HAN standards during the Foundation phase? Please explain your reasoning.

For technical interoperability we need the main SM HAN to be common across the deployment unless limited by problem sites. We would therefore like to see agreement by Energy Suppliers to do this. As a member of SSWG Elster do not foresee major problems arising in foundation phase. We believe industry is converging on a main SM HAN technology (ZigBee) that will be suitable for a large majority of consumer properties. The nightmare scenario of each Energy Supplier deploying a separate HAN technology is therefore highly unlikely.

Elster support further work to build evidence on HAN performance across different property types and in particular solutions of difficult property types. This could initially be by industry co-ordinating on radio module testing.

Any test approach needs to be careful to avoid delays to foundation deployments that will provide real field evidence as well as testing other parts of the processes that need to be robust for high volume deployments.

39.

Do you agree with industry's recommendation that DLMS should be adopted as the application layer for communications with the DCC? Do you believe there are any consumer, economic or technical issues with this solution which could be circumvented by an alternative approach? Do you have any economic, technical or consumer evidence to assist Government in evaluating industry's proposal?

The application working group interim conclusions proposed two options for further evaluation for the WAN link:

1) WAN application layer is DLMS only

2) WAN application layer is dual protocol so supporting DLMS for the electricity meter and native SEP 1.X for gas meter/gas mirror. Communications hub configuration & data items could be either.

Elster recommend these are both assessed further with DCC work and industry application layer groups (DLMS UA, SSWG and others) to ensure the protocol is an open standard, suitable for the scalability and cost targets and service levels of the DCC as well as meet the SMETS data object requirements. SSWG are already carrying out this analysis to provide a clear evaluation of the two options and agree an appropriate adoption policy.

40.

Do you agree with industry's recommendation that DLMS and Zigbee SEP 1.x should be adopted as the application layer for communications within the consumer premises, provided they install the necessary translation equipment? Do you believe there are any consumer, economic or technical issues with this solution which could be resolved by an alternative approach? Do you have any economic, technical or consumer evidence to assist Government in evaluating industry's proposal?

Elster support this assessment.

For communications within the home to and from IHD, gas meter, and any consumer HAN bridging device we recommend SEP1.x is used, as this is a protocol already well suited to consumer and gas metering devices.

For data exchanges between the electricity meter and DCC via the communications hub we recommend DLMS is used as most meters are likely to be based on DLMS to achieve economies of scale with other European markets. We believe these benefits should also be achievable through the adoption of the Dual protocol application layer subject to the confirmation of current evaluation work in SSWG. A subset of the electricity meter data will also need to be supported in SEP1.x for communications with the IHD and consumer HAN bridging device.

Elster do not believe DLMS is as suitable for gas meters given the overheads in supporting DLMS as a tunnel through HAN physical and network layer technologies. Although it can support gas it is typically used for much larger gas metering applications today.

41.

Do you think the Smart Metering Implementation Programme objectives would be best met by the proposed approach above? Or should a single, network-layer technology standard such as IPv6 be mandated? Please explain your reasoning.

Elster agree with clause 154 - the transport layer should be left to the communications provider to allow innovation. We see little benefit from mandating IPv6.

42.

Is the provision of a single network-layer address for each Communications Hub a reasonable and sufficient functional requirement for the Smart Meter WAN? Will this requirement limit potential future capability or present challenges, for example, in multi-occupancy buildings?

This is appropriate for communications hubs into single households; however it should be reviewed further with potential solutions for multi-occupancy buildings.

43.

Do you think that maximum and minimum demand functionality should be included in the SMETS? Please provide supporting evidence for your response

A number of features are already included in the IDTS for DNO requirements such as voltage monitoring (minimum and maximum, with an unusual associated definition) voltage profiling, kvarh profiling etc. While the introduction of monitoring maximum and minimum demands is possible it should be appreciated that this additional functionality needs to be implemented, tested and transferred across the network these costs really need to be assessed against the benefits. If these requirements are to be considered as part of the metering specification they should not need to be implemented for foundation stage.

Elster believe that considerable rationalisation of the specification could and should be achieved on the DNO requirements.

Elster do not see any similar network benefit for min/max demand for gas metering.

44.

Do you think that network registers should be included in the SMETS? Please provide supporting evidence for your response (including the cost implications for Smart Metering Equipment, and any alternative approaches that would provide this functionality).

Comments in 43 are also applicable to this question.

Additional network registers where associated with a completely independent tariff structure, there is a considerable amount of work to implement and no metering product in the UK currently works in this way. The introduction of independent tariff structures and registers would also have an impact on the access rights to the meter.

45.

Do you think that the prepayment meter contactor switch should be utilised to protect consumer premises from “floating neutral” network faults? Please provide evidence on the costs and benefits to support your reasoning.

Elster do not believe that the contactor should be used to protect against floating neutrals. Beama have already submitted strong arguments against this.

46.

Do you agree with the proposed approach for consumers to access data and transfer it from the HAN via a separate “bridging” device? Please explain your reasoning.

Yes, likely interaction with consumer networks is low at least initially and preferred consumer network is unknown. The proposals for connecting via a “ bridging” device maximises future flexibility without

adding cost to the core components. We anticipate the development of enhanced IHDs to facilitate this bridging link. In this case we would expect the incremental IHD cost could be less than the £20 proposed in clause 174 subject to the technology deployed.

47.

Do you have any views on the options presented to ensure that electrical contractors can work safely and efficiently between the electricity meter and the consumer unit/fuse box? Please provide evidence to support your reasoning.

The electricity meter should not be used as a safety device, to achieve these different contactors would be required and ideally additional manual isolation switch, this would add considerably to the cost and complexity of the metering unit. Beama have already submitted a response to this issue.

48.

Do you agree with industry’s proposals for an overall architecture of an application layer standard with translation through a Communications Hub to a HAN? Do you believe there are any consumer, economic or technical issues

Elster agree with the main proposals put forward by the industry group work and the communications hub concept is critical to the architecture.

For electricity meter data we believe there can be a single application layer providing a link from HES at the DCC through to the electricity meter. For a stand alone hub this will require DCC data/to from electricity meter to be tunnelled through the HAN.

However electricity meter data for the IHD should be in the local HAN application layer so this will need some translation in the communications hub (e.g. for Intimate communications hub) or electricity meter (for a peer to peer IHD connection).

Our understanding is that the Application Layer working group report identified two options for gas metering data to be transferred over the WAN

- a) with translation to DLMS at the communications hub
- b) extending the HAN application link over the WAN. This was referred to as Dual Protocol.

49.

Where do you believe that translation is best managed:

- a) At the Communications Hub; Or
- b) At the DCC?

Do you have any economic, technical or consumer evidence to assist Government in evaluating the options?

Industry should be aiming for interoperability and therefore reduce the need for translations. Overall it is preferable to have the data translation in the main IS systems in the DCC rather than embedded devices to simplify change management. However we believe there will be some element of translation at each of these.

The DCC will need to provide an interface between applications protocols on the WAN and industry participants for some of the data items. It is not clear from the data available whether the DCC scope

is considering extending the WAN application protocol formats for data objects between the DCC and Energy Suppliers.

Data object translation is feasible at the communications hub for gas meter data and Elster believe this is preferable to support battery powered gas meters as well as IHDs, if DLMS is the WAN application protocol.

50.

Do you agree that the IHD should only be required to display ambient feedback based on energy usage? Please explain your answer.

The research has shown that ambient feedback is a valuable tool for providing the customer with immediate feedback. While we agree that two indicators may be confusing we believe that the feedback could be offered in a more „ intelligent way” to inform the customer about the combined effect

of cost and usage. E.g, for high usage in a very low price band may still show green while a moderate/low usage in a very high price band may show red this should encourage consumers to use more energy in the low price bands.

51.

Do you agree that Smart Metering Equipment should be designed to support the calculation and/or display of account balances as described above, even though suppliers may not initially be mandated to invoke such functionality for credit customers?

Elster do not believe the account balance should be calculated by the meter as the many features may need to be taken into account such as, discounts, different VAT levels etc. It should be possible for the supplier to send account information to the In Home Display. The display can calculate an ongoing estimate of cost of energy so far today, yesterday, weekly, monthly etc and this information will be to a reasonable level of accuracy as both profile data and price information is available to the display.

It should be recognised that the master for billing remains with the Energy Supplier.

52.

What do you think the costs and benefits are of mandating suppliers to display an account balance (over-and-above those arising from display of information on cumulative cost of consumption) for credit customers on their IHD?

The cost of local calculation of estimates of „ spend to ..” is relatively low as it is offered by many displays today. The cost of messaging an account balance to the IHD should be low.

53.

Do you agree with or have any comments on the Government’s proposals for the outstanding issues from the Response? Please explain your reasoning.

Real Time gas demand - we agree with the clause 202 on gas usage information on the IHD however we” re concerned this is not reflected in table

6.

Smart Metering Equipment Data Items - Elster have significant concerns on the proposed data catalogue. To date there has not been any work carried out to assess this against standard application protocols for WAN and HAN (e.g. DLMS and SEP 1.X). We propose that DECC consider the approach here and request assessment from groups looking at metering equipment protocols e.g. SSWG as well as DLMS UA and ZigBee UA.

There is a risk if this work continues based on the existing data catalogue without attempts to align with the existing protocols and planned extensions that we incur a significant (e.g. 6+ month delay) in defining the data items and protocol data objects required to be referenced from the SMETS.

54.

Do you think that an assurance framework, underpinned by regulatory obligations, is needed to support the delivery of the required functionality, interconnectivity, interoperability, and security of Smart Metering Equipment? Please explain your reasoning.

Elster believe an assurance framework should be developed for the Enduring phase, using the recommendations of the Interoperability Test working group as the start point together with the current certification process used within ZigBee.

However we have concerns on this approach for foundation phase as its likely the underlying standards will be still be developing and we risk the volume benefits to UK PLC set out in the impact assessment in these early years.

The foundation phase should be a test ground for enduring phase and we expect manufacturers to be working with protocol groups to agree the interfaces to meet the DECC/Industry IDTS/SMETS requirements. Many SBGI and BEAMA members are already very active in SSWG to ensure solutions meeting the IDTS are based on common open specifications. We also provide input to CENELEC TC13 and CEN TC 294 via the mirror groups in BSI, DLMS User Association and the ZigBee Alliance to support standardisation of this work.

During foundation we would expect to see the shift in the work within SSWG (and others) from agreeing GB companion specifications, through to work defining test specifications for interop which can then provide a basis for an initial level of interoperability and the work to define an assurance framework for enduring.

55.

Do you agree that as part of any assurance framework adopted, there should be a testing regime in place to support the delivery of the required functionality, interoperability and security? Please explain your reasoning

Elster agree a testing and certification regime will be needed.

Elster would recommend development of test specifications aligned with the use cases, and interface definitions defined down to protocol, and data object level. These can then be used together with “golden units” as the basis for certification. The output from the Interoperability Test Working group is

a reference point together with the current process for ZigBee certified devices.

As set out in the responses to questions 10 and 54, we believe it is premature to expect to get this in place for foundation and it requires a critical mass of manufacturers and devices to develop and prove the process.

56.

What are your views on the options outlined for a testing regime? Are there other options that should be considered?

The approach is likely to include aspects of all options in 215:

Elster believe this will evolve from a market led approach developing during foundation e.g. based on SSWG with Energy Suppliers. However we anticipate that it” s likely this will need to require stronger governance in the transition from foundation to enduring phase.

Elster recognise the work undertaken by the interoperability test group and this needs further assessment along with assessing roles of test houses similar to the existing ZigBee certification. We have some concerns on governance under the Smart Energy Code unless manufacturing representation is introduced where the SEC directly impacts the specifications and assurance.

Elster do believe there is a role for certification of specific aspects e.g. to demonstrate compliance with protocol and security interfaces. For metering protocols ZigBee is a reference point for this today.

57.

Do you think that a different approach to assurance is necessary for the Foundation and enduring phases? Please explain your answer.

As set out in the answers to questions 54 and 55, a different approach will be required in foundation phase and this would be best progressed by industry groups. The processes from this can then feed into a stronger certification process for the enduring phase.

Elster would expect to work with other partners in SSWG to develop test specifications for the interfaces between the main devices on the HAN and have phased demonstrations and proof of interoperability. We would welcome discussions between representatives from the interoperability test working group and SSWG to progress ideas for this.

58.

Do you think that the activities outlined above are a suitable way for achieving interoperability across Smart Metering Equipment cryptographic functionality? How else could this be achieved?

While Elster broadly support the work to-date outlined in this section we have a number of concerns relating to clauses 219 to 214:

219: While STEG was initially open to a wider review body, the DCC procurement restrictions make it difficult for most manufacturers to be part of the current process. We urge DECC to reconsider how manufacturers can be engaged in any further work to ensure the requirements will be applicable to embedded metering devices.

224: Elster support the development of an overall trust model. However we do not believe the cryptographic key management needs to be designed at government level. Instead, only high level requirements on functionality shall be given to the DCC operators and manufacturers (e.g. “ devices

shall support a hybrid scheme using FIPS approved ciphers”). Industry can then support the

development of detailed specification along with work on the application profiles for WAN and HAN.

Regarding the specification of cryptographic primitives:

- The development of common cryptographic interfaces will only significantly support interoperability as part of the Application Layer protocol and associated data items linking the devices on the WAN and HAN.
- Elster together with a number of other Beama and SBGI member companies are already working on addressing these requirements based on application layer protocol standards and where available European standards. Industry groups are well placed to take on this level of detail for the WAN and HAN protocols. E.g, via the protocol user groups in DLMS User Association, ZigBee SEP, supported by companies focused on GB requirements via SSWG.
- UK Manufacturers in SSWG are already proposing a set of cryptographic primitives to be supported following the *hybrid* model. This should be an area where industry can lead the definition with validation by appropriate DECC personnel.

59.

Do you agree that cryptographic/ key management is necessary to secure the End-to-end Smart Metering System? Please explain your reasoning

Elster agree that key management is necessary. Amongst others, these functionalities will enable a secure firmware update mechanism of devices, the provisioning of trust, on and offline key establishment.

However as set out in Q58 above we do not agree that the mechanisms for key management need to be defined at government level. Instead industry groups are best placed to take forward the technical implementation specification aligned with the work on extending application profiles. The resultant standards or proposals for standards can then be referenced from SMETS.

60.

Do you agree with the Government's assessment of the advantages and disadvantages of the cryptographic

Solutions identified above? What other options should the government consider? Please explain your reasoning.

Elster agree with the advantages outlined for the solutions and manufacturers are already developing and defining open interoperable solutions based on the hybrid scheme. We do not believe that further hardware is necessary to be mandated to realise the " asymmetric" or " hybrid" functionality for any

mains powered devices and there are already meters and communications hubs becoming commercially available that utilise the hybrid scheme completely in firmware.

Battery powered devices (e.g. Gas Meters) may also be able to use the hybrid scheme depending on the appropriate use of symmetric and asymmetric algorithms. We agree that, compared to a symmetric operation, the invocation of any asymmetric operation could significantly drain energy from those devices. Therefore, asymmetric operations are only proposed to be applied to critical commands (e.g. monthly billing meter reads, prepay top ups and tariff configuration). This is already the basis of the security requirements in IDTS and is recognised in manufacturer work on application protocol extensions.

Additionally we do not believe that mandating the use of a dedicated hardware security module will significantly improve security of an architecture where all devices use unique credentials and are physically sealed (tamper evidence) i.e. a physical attack will only affect one particular device. However, a mandatory use of dedicated hardware security could significantly increase the unit price as well as delaying design processes and foundation volumes. The required reliability of the cryptographic function can be achieved with the use of approved cipher implementations (e.g FIPS).

61.

Do you think that it would be appropriate for the DCC to be responsible for cryptographic key management for the End-to-end Smart Metering System? What other options should the Government consider? Please explain your reasoning.

Elster agree that DCC is the most suitable location for key management responsible for the Smart Metering System although we suggest this does need to be tightly linked to meter registration instance. However further consideration will be required to ensure that links to manufactures are effective to support use cases for secure firmware updates and for return/repair.

62.

How do you believe the security approach should be applied to opted out non-domestic consumers? Do you see any issues with the approach? Please explain your reasoning.

Elster propose that advanced meters continue under existing schemes, once devices are opted in they should be capable of aligning with the security schemes outlined above.

We also recognise that the work to date in STEG and in the IDTS has focused on domestic customers to date. More work is required in reviewing the non-domestic market and avoiding unnecessary constraints on the existing deployments of advanced metering which in turn could delay the benefits to this market.

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
Base Elect Meters and variants				<p>1.24 – meters are specified and approved as 100A devices, while we agree they should be able to withstand a 120A a better definition is required that 'long period'</p> <p>1.26, 1.27, 1.28- this defines detailed functionality of the meter which is NOT defined in the actual IOTS for the meter.</p> <p>Normative references:</p> <ul style="list-style-type: none"> - BS EN 62053-21 should be removed as replaced by MID standard - BS EN 62052-11 should be removed as replaced by MID standard - BS EN 62055-31 this has little relevance to the uk market apart from accuracy class which is referred to in other documents - BS EN 60947-3 load switch requirements with reference to electricity meters are covered in BS EN 62055-31 and therefore this reference should be removed <p>Meter Variants – it would have been ideal if the specification could suggest a</p>
Base Gas Meters			Minor	<p>Updates proposed to:</p> <p>1.58 does not make sense and it is a duplicate of 1.56.</p> <p>1.59: TC237 is a committee, the document is a draft of EN 16314.</p> <p>1.60 remove the wording, "requirements of the" 1.61. the bullets do not fit within the context heading of "Marking"</p> <p>1.60 WEEE is not applicable.</p>
Architectures			Minor	<p>Cross references refer to those in the supporting document</p> <p>Figure 20 gas meter should show SM HAN, not secondary gas P2P SM HAN</p>
ESoDR				

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
ESoDR	IM.01	The smart metering system components shall be installable in current existing meter locations in consumer premises.		
ESoDR	IM.02	The smart metering system shall enable remote firmware upgrades	Major	<p>IM.2.5 Needs to clearly define how the failure to upgrade is detected and implemented. We see this as detection of the image being valid (i.e. by verification of the authenticating digital signature and incremental checks e.g. on version compatibility), then switch to new image. After this reversion/rollback is not normally feasible and cannot be a mandated requirement</p> <p>The apparent requirement to be able to implement a patch should be removed, this is not the norm for meter firmware upgrades today but it can be an optional feature for manufacturers own designs</p> <p>The normative reference to the Siemens Norm SN29500 is not a relevant standard</p>
ESoDR	IM.03	The smart metering system shall support in situ exchange of WAN communication technology (without removal of meter).		
ESoDR	IM.04	The smart metering system shall resume normal operation without technician intervention after a failure in the metering system power supply.		

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
ESoDR	IM.05	The smart metering system components shall be uniquely identifiable electronically where applicable.	Minor	This requires that a co-ordinated ID system is adopted across the industry
ESoDR	IM.06	The smart metering system components shall be uniquely identifiable mechanically where applicable.	Minor	This requires that a co-ordinated ID system is adopted across the industry
ESoDR	IM.07	The smart metering system components' batteries shall only be exchangeable by authorised personnel.	Minor	<p>We recommend IM.7.3 should refer to the detection of non-authorised battery removal rather than access to a battery compartment. Note the transmission of such event may not be completed until battery reconnection.</p> <p>The IM.7.4 requirements for battery compartment access shall be communicated to the DCC/Headend at the time of detection could impact cost of solution. A logging requirement on battery access or removal would be more inclusive on design options</p>
ESoDR	IM.08	The smart metering system components shall support local access and configurability by authorised personnel.	Minor	<p>IM.8.5 requires all configuration changes to be logged. A definition of the items that constitute a configuration change is required.</p> <p>We recommend that this is an event that shows that configuration has occurred.</p>
ESoDR	IM.09	The smart metering system shall allow in situ maintenance for non safety critical maintenance.	Minor	IM.09.1 and IM 9.2 these are both repeat requirements already stated in IM 7.0

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
ESoDR	IM.10	The smart metering system shall support remote identification (by authorised parties) of devices attached to the HAN.		
ESoDR	IM.11	The smart metering system shall support a simple installation without the need for manual data entry to the system components.	Major	<p>More work is needed on an industry approach to HHT comms and authentication, e.g. the requirement to communicate with smart meters not connected to SM HAN etc</p> <p>This requirement needs further evaluation with industry to ensure interoperability between meter operators</p> <p>11.16 – 11.27 refer to a test/diagnostic mode which will allow operation of the contactors, there needs to be very careful consideration of how this shall be done in particular the reference to this being initiated manually.</p> <p>Components affected – no mention of gas meter, an HHT may communicate only with the Comms Hub or be required to communicate directly with a gas meter this needs more work.</p>
ESoDR	IM.12	The smart metering system shall be installed and maintained in a manner that protects public safety.		

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
ESoDR	OP.01	The smart metering equipment components shall not rely on systems or services that are owned or operated by third parties, including consumers, where there is no specific provision to ensure the availability of such systems or services.		
ESoDR	OP.02	The smart metering system shall use UTC for all timing functions/date & timestamps.	Minor	This currently conflicts with IH2 – meters presenting information in UTC here, IHD expects local time. We suggest OP2 is correct as long as there is an indicator of local time offset for IHD to use.
ESoDR	OP.03	The smart meter shall support "last gasp" communications to notify loss of energy supply.	Major	See main consultation response question

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	OP.04	The smart metering system components at the consumer premises comprising single phase electricity meter, communications module, and a mandated IHD shall consume a typical value of 4.6W combined when averaged and under quiescent operating conditions.		
EsoDR	OP.05	The smart metering system time shall be accurate to within 0.5s within 24 hours.		
EsoDR	OP.06	The smart metering system shall support a default mode of operation (reset to minimum functionality).	Minor	Default mode should be defined e.g. Credit, single rate, Events for notification should be automatic for tariff or mode change
EsoDR	OP.07	The smart metering system shall support firmware upgrades while maintaining normal metrology functionality.		

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	OP.08	The smart metering system shall be designed such that, if the enablement/disablement mechanism has interrupted the consumer's supply, the restoration of this supply cannot occur without reliable local intervention.		
EsoDR	DS.01	The smart metering system shall display any currency information using £ and pence (but be Euro compatible).		
EsoDR	DS.02	The smart metering system shall be capable of storing 13 months of half hourly (kWh and cubic metres) consumption data.		

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	DS.03	The smart metering system shall support display of mode of operation (credit or Prepayment).	Major	This is one of several DS requirements specifying too many details to be displayed which could cause problems for consumers viewing the display or require larger meter displays increasing the cost. We should remember that many of these are in meter cupboards and not frequently used. E.g. is a separate mode descriptor really required? A gas meter default display showing m3 or £ is obvious.
EsoDR	DS.04	The smart metering system shall display energy supply status (enabled or disabled).	Major	DS4.7 implies a very large display – comments as above.
EsoDR	DS.OS	The smart metering system shall display local time unambiguously (where it is displayed).	Major	For Local time changes we propose this is achieved by one component advising others rather than all components tracking the change. We believe it is preferable that this is issued from the head end /DCC rather than holding rules for 30 years. If it is calculated locally the Comms Hub is the best place for this.
EsoDR	DS.06	The smart metering system shall support erasure of data stored locally.	Minor	DS6.1. We propose that meters have ability to block rather than delete profile data, we have some concerns if a consumer changes their mind and want access to 13 months data?
EsoDR	DS.07	The smart metering system variants where appropriate shall support the provision of information in a manner that takes account of the requirements of persons with disabilities.	Minor	Needs more clarity to define how we should consider. Implications for meters and IHD.

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	DS.08	The smart metering system shall support English and Welsh language for any human communication.	Major	It is unclear whether this applies to IHD only or meters and IHD
EsoDR	DS.09	The smart metering system shall unambiguously identify all of its registers.	Minor	This requires Industry definition. It should be checked and aligned with PC.08.
EsoDR	IN.01	The smart metering system shall be capable of supporting two different suppliers (i.e. for gas and electricity) in the same premise as well as switching between any licensed suppliers.		
EsoDR	IN.02	The smart metering system shall allow for change of supplier remotely without premise visit.	Minor	We query whether data item reference for phone numbers-are these relevant for meters and basic IHD?
EsoDR	IN.03	The smart metering system shall support non proprietary data formats for information exchange with consumers	Minor	IN.03.2. Repeated requirements defined elsewhere on storage IN03.7 We assume the Consumer Interface Device is the bridging device to a consumer HAN. The data can remain in SM HAN application layer language and conversion to be up to a bridging device to convert to appropriate consumer language.

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	PC.01	The smart metering system shall be remotely switchable between prepayment and credit mode of operation	Minor	PC1.2 is specified in DS.3.4 so repeated requirement PC1.10 is not needed it attempts to redefine storage which is part of PC.6 (should not be 3 months storage). PC.1.16 ambiguous definition – needs further explanation
EsoDR	PC.02	The smart metering system shall support prepayment mode of operation via remote top-ups.		
EsoDR	PC.03	The smart metering system operating in prepayment mode shall support remote configuration of emergency/friendly credit	Major	Minor PC3.9 Audible tones – it would be better to move these parts to a difference user interface requirement, list them and whether they should be enabled or disabled and by whom. We question whether they should all to be individually configurable Major PC3.28 – The 10 minute grace period is over specified
EsoDR	PC.04	The smart metering system operating in prepayment mode shall support remote configuration of debt recovery.	Major	This looks a significant increase in functionality we have concerns on the complexity that could delay development and cause issues and delays for interoperability/compliance testing. 3 debts ok, but why not stay on a simple time/day based recovery method. Historically Energy suppliers have wanted to balance debt collection options with minimizing calls to customer services. The debt collection options do not take account of the fact that in the smart systems energy suppliers will have much better visibility on debt collection to follow up payments. PC04.41 – request clarity.
EsoDR	PC.OS	The smart metering system operating in prepayment mode shall be capable of maintaining supply to premise independent of WAN communications.		

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	PC.06	The smart metering system shall store the history of the last 10 debt payments (of each type) from the meter balance/vend and synchronise this data with the head-end system. The payment history shall be retained in the smart metering system and be capable of being displayed locally and shall, as a minimum, include the last five top ups in prepayment/Pay-As-You-Go mode with amount, dates and times.	Minor	Data Items requires further review there are a large number listed here
EsoDR	PC.07	The smart metering system shall store data used for billing and settlement purposes for at least 3 months.	Minor	PC.7.1 Propose we define in more detail and/or refer to the rate registers required

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	PC.08	The smart metering system shall support real time (defined here as 30 minutes) remotely and locally configurable tariff structures (tiers and rates).	Major	<p>P8.15 Load Limit monitoring, this functionality seems very complex and would be difficult for customers to relate to.</p> <p>P8.33, 34 these definitions could be simplified by removing the statement 'The remaining TOU registers, in use shall not have blocks when operating in the configuration'</p> <p>PC8.34 concern on the robustness of blocks over time of use. This will be very problematic for consumers and will require a lot of data to be reported from meters for bill reconciliation. For Gas with an estimated CV it will not be accurate on the meters and need half hour data at the HES to calculate the bill.</p> <p>PC.8.36 Question whether snapshots really needed on credit top-up</p> <p>PC.8.41 – PC8.40 We suggest that only UTC be used for Tariffs.</p>
EsoDR	PC.10	The smart metering system operating in prepayment mode shall support local credit top up.	Minor	<p>PC.10.2 Should IHD or Gas meter immediately validate and authenticate the request? This is an issue if Gas meter is asleep.</p>
EsoDR	PC.11	The smart meter system shall support prompt and timely register of remote top ups.	Major	<p>Sections of the extended requirement are a Significant duplication of requirement PC.10</p> <p>PC.11.19 -Gas meter shall check for credit top ups at a more frequent and configurable period (xx minutes but no greater than 30 minutes.) – this could have a significant effect on battery life and more detail is required to determine how this effect can be limited. E.g. Should clarify that the valve is closed periods for more frequent Comms Channel wake ups and re-assess with the battery life work. Elster would expect SBGI to be part of the evaluation on this.</p> <p>Additionally the overall requirement needs more clarity e.g. from Architecture supporting document on what components are responsible for which parts of this requirement.</p>

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	ES.01	The smart metering system shall support remote enablement and disablement of supply into the consumer premise.		<p>Several of the requirements imply that different parties will access the meter and the meter would have to recognize the party that had changed something – this would increase the complexity of access control considerable and will also increase the complexity of metering function.</p> <p>Meter Integrity sensor needs clearer definition.</p> <p>DNOs can remotely close the contactor without local intervention, is this a safety issue?</p>
EsoDR	ES.02	The smart metering system shall support at least one total register for cumulative import kWh.		
EsoDR	ES.03	The smart metering system shall support at least one total register for cumulative export kWh.		
EsoDR	ES.04	The smart metering system shall support at least one total register for cumulative import kVarh.		
EsoDR	ES.05	The smart metering system shall support at least one total register for cumulative export kVarh.		
EsoDR	ES.06	The smart metering system shall support import kW measurement.		

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	ES.07	The smart metering system shall support export kW measurement.		
EsoDR	ES.08	The smart metering system shall support import kVAr measurement.		
EsoDR	ES.09	The smart metering system shall support export kVAr measurement.		
EsoDR	ES.10	The smart metering system shall support measurement of other power quality data including: RMS voltage, over/under voltage, sag/swell.		<p>10.4 States that a power quality event could be used to open the contactor, it should be remembered that the contactor is not a safety device.</p> <p>We consider the definition of under/over voltage event definition over complex for a residential meter. The 'extreme under and over voltage' could be duplicated to monitor less extreme events.</p> <p>10.6 Min/ max definition very similar to those in 10.4 – is this an error?</p> <p>This requirement is still over complex.</p> <p>10.9 definition almost the same as 10.4 but different title!</p>
EsoDR	ES.11	The smart metering system shall support capture of consumption and demand data at 5 second intervals.		
EsoDR	ES.12	The smart metering system shall allow the supply switch to be configurable to be open or closed for a range of events.		<p>Much of this is a repeat of ES.01</p> <p>12.3 'Energy consumption limit being exceeded' this is a new term – should it be load limit?</p> <p>12.4 First mention of MD, is the function here the same as Load limit – if so just use load limit throughout. If it is a true MD then a definition needs to be added.</p> <p>12.5 how does the engineer re-arm the contactor?</p>

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	ES.13	The smart metering system shall support auxiliary switching and load control commands from remote authorized parties.		
EsoDR	GS.01	The smart metering system shall support local storage of energy calculation data (calorific value and PTZ conversion factor).		
EsoDR	GS.02	The smart metering system shall support at least one cumulative register for gas consumption.		
EsoDR	GS.03	The smart metering system shall support at least 48 wake up events per 24 hour period.	Minor	GS3.3 propose we remove the requirement to wake up at specific time.
EsoDR	GS.04	The smart metering system shall support capture of gas consumption data at 6 minute intervals.	Minor	<p>There still seems to be no real need for this requirement, this is because gas is used at peak times in the domestic sector for very short periods. So at best only two or three samples of consumption would be recorded. Steadier flows for heating can be monitored but there seems no real difference between this data and the data that could be retrieved from half hourly profiles.</p> <p>If the requirement is kept it needs some more detail e.g. how fast sampling is initiated and how the data is extracted e.g. via HHT communicating to gas meter via Comms Hub. This will need new data items in protocols to support it.</p>

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	GS.05	The smart metering system shall support a valve for enablement and disablement of gas supply.	Major	The Authorisation rules in 5.21 should be done at DCC, we would expect the Comms Hub to validate that the command was from DCC and additionally the meter to verify the command is digitally signed by DCC. The access rules should also consider what happens if there is loss of WAN. The current wording needs tighter definition, it is the meter that receives local and remote commands not the valve. 5.22 does not state the three conditions for re-enablement. Finally we recommend the legality of this function is checked (under the D & C regs)
EsoDR	GS.06	The smart metering system shall continue normal operation in the event of a gas supply interruption (valve will retain state).	Minor	GS6.1 ok, However the remainder are examples of repeated requirements. 6.2 is a repeat of 5.20, 6.3 is a repeat of 5.4.
EsoDR	GS.07	The smart metering system valve shall be configurable to either retain state or be closed in the event of battery failure.		
EsoDR	GS.08	The smart metering system shall support 15 year battery life under normal operating conditions including prepayment operation.	Major	Parts of the Gas meter battery supporting document needs to be in the requirement or an appendix (currently only available on Huddle). We recommend the supporting document is split into specification reference as the operational model to meet GS.8 and the supporting evidence that was required
EsoDR	GS.10	The smart metering system shall check if there is uncontrolled gas flow at the point of local acknowledgement at re-enablement.	Minor	We recommend a definition of uncontrolled leak of gas is included – this could make reference to European standard draft.

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	01.01	The smart metering system shall support logging of meter events such as faults, tampers, thresholds associated with extreme levels etc. This will include but is not limited to the time and date stamping and recording of the originating device for the event.	Major	<p>Manufacturers have major concerns on this requirement</p> <p>Events and alarms normally identify something has happened and when, we recommend snapshots are limited to a few select events and try and align on snapshot data for these e.g. Prepay accounting snapshots.</p> <p>It would be useful to assess the proposed list of events to those supported by applications protocols in DLMS COSEM and SEP1.1, SSWG have already undertaken some work to extend these but this is still smaller than the list proposed in the IOTS.</p> <p>011.4 We propose that while the meters may have multiple event logs the logs should normally operate on a FIFO basis, 01.1.4 conflicts with 01.1.12</p> <p>01.1.11 – the proposed minimum size of 100 is arbitrary and will depend on the actual event log type and the events associated with the log.</p> <p>01.1.14- we are concerned that the events could be controlled by different authorized parties. We would expect this is normally the DCC or if the DCC does not issue the source commands then the owning energy supplier</p>
EsoDR	01.02	The smart metering system shall support remote configuration of logs, alarms and thresholds.	Minor	<p>Concerns on Authorized party requests – this should be managed by the DCC, Event configuration -should not need to be "effective from" there is not reason why this cannot be a simple configuration on receipt by the meter/Comms Hub.</p> <p>01.02.2 Monitoring and alarming certain events between configurable dates adds a great deal of complexity and should not be needed.</p> <p>01.02.3 Each event log should have an occurrence count not each event.</p>
EsoDR	01.03	The smart metering system shall support configuration of alarms associated with usage thresholds.	Minor	<p>01.1.3.1 We understood gas max demand /peak flow threshold was not required when discussed in the hot house.</p> <p>Could this not be replaced by an event showing the measured flow has exceeded the metrology limit for the meter type.</p> <p>01.03.1 - Reference to maximum demand - not defined in asn ES. Requirement</p> <p>- Reactive power monitoring – this is not defined in an ES requirement.</p>

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	01.04	The smart metering system shall store its configuration data in non volatile memory.	Minor	The extended requirement detail is not required as the Prospectus requirement for storing configuration data in non-volatile memory is already clear. The extended requirement describes a process for comms of the events which is beyond the actual requirement. 01.04.1 & 01.04.4 What is meant by validation/configuration errors, the meter can not 'self detect' if something has been configured incorrectly.
EsoDR	01.05	The smart metering system components shall be identifiable within any diagnostic log information.	Minor	011.5.2 needs further consideration; We understood this requirement is to ensure that the meter ID or Comms Hub ID is available when reporting diagnostic event logs up the system. We would not normally expect the meter to record the HHT ID together with the event logs. If this is required it would be simpler to have a separate log of local HHT access start / end dates and times with HHT IDs.
EsoDR	01.06	The smart meter system shall communicate battery status for metrology related functionality.	Minor	There is a lot of duplication with GS.7 in the detail e.g. 01.6.1 01.6.4 not required and ambiguous also depending on interpretation it may not be possible 01.6.5 this sub requirement is not appropriate here
EsoDR	HA.01	The HAN interface shall be based on open and non proprietary standards.		
EsoDR	HA.02	The HAN interface shall only support Authorized devices (i.e. no Authorized d linking of devices).		

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	HA.03	The HAN interface shall support real-time (better than ten seconds, target of five seconds) two way communication from mains powered nodes.		
EsoDR	HA.OS	The HAN interface shall be certified and tested for interoperability.		
EsoDR	HA.O?	The HAN interface shall support load and device control events.		
EsoDR	HA.09	The HAN interface shall support the use of repeaters, boosters, etc. to extend range.		
EsoDR	HA.10	The HAN interface shall support acknowledgement of signals.		
EsoDR	HA.11	The HAN interface shall support 30 minute update (wake up) frequency from battery powered nodes.		

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	HA.12	The HAN interface firmware shall be remotely and locally upgradeable.	Major	As per other firmware upgrades "reversion" to previous version needs clarifying.
EsoDR	HA.13	The HAN interface shall support Authorized gateway/bridging devices to access data made available on the HAN.		
EsoDR	HA.14	The HAN shall support a defined application profile for devices that connect to the HAN. This profile shall support the smart metering services, meter requirements and IHD requirements defined in the Catalogue.		
EsoDR	HA.15	The HAN shall support alphanumeric messaging.	Minor	Clarification is required if this is intended for an IHD only (above minimum spec) or if its also for the minimum spec meters. Given the normal location fmr meters we recommend the former, Requirement HA.15.1 states IHDs where as the Components affected section mentions all (even Comms Hubs that would not normally have a display)
EsoDR	HA.16	The HAN shall support the security and privacy requirements.		

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	HA.17	The HAN shall be capable of supporting other utility meters where the data or physical (e.g. range) requirements do not exceed those of gas and electricity smart meters.		
EsoDR	HA.19	The HAN shall support addition of new devices classes.		
EsoDR	HA.20	The HAN shall be backwards compatible.		
EsoDR	HA.21	The HAN applications profile shall be used by all smart metering system components in a consumer premises where possible.		
EsoDR	HA.22	The HAN shall not interfere with existing prevalent premises networks.		
EsoDR	WA.01	The WAN interface shall be based on open and non proprietary standards.		Would prefer that the extended wording be used – the Application Data Layer be based on open and non-proprietary standards.

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
EsoDR	WA.02	The WAN interface shall support interrogation of WAN enabled devices in line with agreed DCC service levels.		
EsoDR	WA.03	The WAN interface shall support acknowledge signals.		
EsoDR	WA.04	The WAN interface shall be certified and tested for interoperability.		
EsoDR	WA.05	The WAN shall support the security and privacy requirements.		
EsoDR	WA.06	The WAN interface shall be capable of being disabled and re-enabled by authorized personnel.		
EsoDR	IH.01	The IHD shall support mains power operation.		

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
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EsoDR	IH.02	<p>The IHD shall show the following information for gas and electricity:</p> <ul style="list-style-type: none"> - Indicative real-time usage in kW; - Indicative real-time rate of consumption in pence per hour; - Electricity – Metered cumulative consumption in kWh and £ for current day/week/month/billing period; - Gas – Metered cumulative consumption in m3, Indicative (with in CV variance) cumulative consumption in kWh and £ for current day/week/month/billing period; - A high-level requirement that historical data should be presented in a meaningful way so as to allow a consumer to compare current usage with past usage; - Account balance information (amount in credit or debit) in real time for prepayment customers and on at least a monthly basis for credit customers; - Current and next tariff rate(i.e. cost per unit in pence per kWh); - Local time; - Status of communication link. <p>All information will be displayed in digital numerical format as a minimum. In addition, information on real-time energy rate (kilowatt) and cost of current level of consumption (pence per hour) will, as a minimum, be</p>	<p>Elster recommend further work to optimize the data items, which are produced by meters (or SMS which should include the IHD!), and in the case of gas what aggregation is done by the Gas Mirror of the Comms Hubs to simplify operations across the SM HAN. We are concerned on the volume of data items required to support this and propos that some simplifications could be made by acknowledging that additional basic arithmetic functions are in the IHD. One of the minimum requirements is to allow erasure of the data on the IHD this is contradictory with the requirement to update the information on a regular basis. Data should be blocked from being sent to the IHD on change of tenancy from the meter. There should be a method of removing the IHD from the SMHAN if a customer wishes future tenants to see their data. The requirement to 'Null' values if the SMHAN is lost appears not very customer friendly. If this is required then data could be retained in the IHD to prevent the need to retransmit the data and just the values on the display NULLED. The Architecture supporting document is a reference for industry work on gas meter and gas mirror data.</p> <p>IH2.4.1 Indication of low/med/high – if this is required in the SMS then it needs to be clearly defined, however we believe IHDs already have the capability to trend the pattern of usage and therefore the calculations should be done on the IHD.</p> <p>IH2.7.x retransmission of data on a regular basis should not be necessary, the IHD should just request the missing data.</p>
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IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
<p>EsoDR</p> <p>Security Requirements</p> <p>AppA Glossary</p> <p>App B Normative References</p>	IH.03	The average IHD power consumption shall be less than 0.6W.	<p>Major</p> <p>Major</p>	<p>Wei believe the security requirements provide a very effective basis for the security framework however we have some concerns on the details within these that could delay deployments and unnecessary cost to devices which are not proportionate to the threat. Our detailed assessment is included below:</p> <p>The table has been extracted improperly from the Draft European Technical Report in that there are a number of caveats around the table that should be reproduced. The most important of these is that this is not an exclusive list of standards. This aligns with the Government position in the consultation that standardisation will need to have started by early 2014.</p>
App CHAN evaluation				
App D Events Table			Major	<p>See Comments on DI.1.</p> <p>Some of these are not consistent with the main body of text eg, event code 1, threshold SOV main text =180V</p> <p>Several events appear very similar and overlapping as there were development by different working groups, a level of consistency should be found.</p> <p>Event 51 referse to factory setteing other places call it 'normal' or 'default' a clear definition is required as meters genrally do not have dault configurations</p>

IOTS Section	OECC SoOR 10	March 2011 SoOR Requirement (summary requirement not full IOTS)	Issue, Major / minor	Elster comments on detailed requirement in IOTS
General comments				<ul style="list-style-type: none"> - kvarh is lower case throughout, different many places in document - several places state the device should acknowledge the receipt of certain messages, this is not proposed in any of the protocols, there will be a simple Ack to should comms was successful the device will not make any special response.

Additional concerns on Security requirements:

SP.2

Any cryptographic algorithm that is relied upon for the security of the End-to-end Smart Metering System shall be FIPS (or equivalent) approved.

Remark: Guidance shall be given what is considered as a FIPS approved;

- Is FIPS certification necessary?
- Is an external testimonial for FIPS compliancy necessary?
- Is a statement of the manufacturer sufficient that only FIPS approved ciphers are used in the products (self certification)?

SP.3

Any random number generation algorithm for cryptographic key generation that is relied upon for the security of the End-to-end Smart Metering System shall be FIPS (or equivalent) approved.

Remark: See response to SP.2

SP.4

Any Cryptographic Module used within the End-to-end Smart Metering System shall be compliant to: FIPS140-2 Level 2 excluding the 'Operational Environment' requirement FIPS140-2 Level 1 for the 'Operational Environment' requirement.

Remark: Clarification is required on the physical bounds of a Cryptographic Module. Is it acceptable that Core Devices will be compliant to FIPS 140-2 Level 2 and therefore a Cryptographic Module can be purely realized in firmware (crypto library)? How shall conformity be expressed (compare to remarks on SP.2)?

It is not seen that the use of a dedicated hardware security module will significantly improve security of an architecture where all devices use unique credentials and are physically sealed (tamper evidence). Therefore, a physical attack will only affect one particular device. However, a mandatory use of dedicated hardware security would significantly increase the unit price. Requirements shall be defined on a use case basis, not precluding solutions in firmware only if those can meet the same security target.

SP.14

Core Devices shall store security credentials and supporting data in a secured area or Cryptographic Module.

Remark: Clarification required if the "secured area" shall then be compliant with FIPS 140-2 Level 2, or what the requirements are instead.

SP.17

Core Devices shall support the capability to update or revoke Security Credentials remotely.

Remark: Please consider that in current Smart Meter systems certain devices use certificates that are bound to the device and valid for the overall device live time. A revocation mechanism of those certificates is not supported.

Instead, a "white listing" mechanism (explicitly approving valid certificates/credentials) should be considered as an alternative solution. In this case only approved (white listed) devices will be able to communicate with the Smart Meter infrastructure. Unapproved devices - even if they possess a valid certificate – cannot communicate. It is suggested to include "white listing" as a security mean, in case revoking is not supported by end devices.

SP.20 (also SP.32 for Comms Hub)

The Smart Meter shall check the validity of the contents and format of all Requests and Commands when it is the endpoint of the communication.

Remark: Validation of command / message content as a mechanism to defend against malicious code attacks is difficult to achieve or might be not sufficient (This is especially the case with embedded devices that share data and code space). Attack techniques like “Return Based Programming” or “Return to Libc” have shown that many “standard” defence mechanisms against malformed data (exploits) can be circumvented.

It is recommended this requirement is removed. Instead the given threat shall be mitigated with the combination of SP.18, SP.19 and SP.21 respectively SP.30, SP31 and SP33. The verification of the message integrity together with the message source will ensure no malicious code can be injected remotely by an un-trusted party. Message integrity checks (MAC or digital signature) shall be performed before processing the content any further. Also, the integrity check shall ensure the originated source is verified (e.g. for critical commands provide evidence a command was issued by a Head-End system and the content of the message was not modified if such a message has been translated by a Comms Hub).

SP.62

Any cryptographic functionality used in UTRN generation shall be FIPS (or an equivalent) approved.

Remark: It shall be noted that a so called “format preserving” codes would required generating UTRNs that can be entered by a consumer with acceptable comfort. Use of non format preserving codes will create significant longer numbers and therefore might result of user acceptance or high inconvenience. However, no format preserving code has a FIPS approval yet. (Approval for AES FFX operation mode is currently ongoing).

It is suggested to not make this requirement effective until a format preserving code has obtained a FIPS approval.