

need to be held centrally (DCC or MPAS). The obligation to repair or provide can then be taken on by the new supplier for the remainder of the warranty period.

Question 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.
	<p>Generally speaking EDF Energy believes that the draft licence conditions do indeed underpin the policy intentions for providing IHDs to domestic consumers.</p> <p>However, EDF Energy requires some clarification around the provision of enhanced IHDs to customers. Section 81 of the consultation states;</p> <p>"Some suppliers may wish to offer their customers IHDs which go beyond the required IHD level of functionality. Under these circumstances a one-off or up-front charge may be made, but the customer must have the choice of:</p> <ul style="list-style-type: none"> • Whether to take the minimum specification IHD or • To pay an up-front charge for an enhanced IHD." <p>This statement is a little ambiguous and EDF Energy are very concerned that the wording will not allow the customers the choice of paying for an enhanced IHD over an extended period of time, but in effect, restricts them to a one off, up front payment. We do not believe that this will allow the customers to engage with the specific functions provided on an enhanced IHD device that is most suitable for their circumstances. We require clarification that on installation, customers will be able to choose the right IHD over the most appropriate payment period to suit them with suppliers obligated to notify the customer the full cost implications of their choice. The risk is that consumers who are not engaged pre-installation, will not be able to make decisions on the day of installation that will ensure best use of the IHD.</p> <p>There are a number of points that we would like more clarification:</p> <p>Section 2 - As the draft licence is written, Suppliers are obliged to provide Domestic Customers with clear and accurate information concerning the availability and benefits of an In-Home Display. The term 'accurate' needs to be defined as the benefits of the IHD are not clear and are still being debated. Some standardised information should be produced centrally so that ambiguity does not lead to misinformation. Indeed some suppliers could possible save costs by not providing an IHD if refusal levels are not clearly monitored by the government</p> <p>Section 5 – There is a need to further define the term 'reasonable steps'.</p> <p>Section 6 – Again, there is a need to define 'reasonable steps'.</p> <p>Section 7 - Interoperability – Refer to answer to Question 18 where a supplier is providing more than minimum functionality to an IHD. These features may not continue. Interoperability only refers to minimum requirements.</p>

Question 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.
	<p>We agree that Condition 2 should have a reference to the Secretary of State added.</p> <p>Given the inclusion of the defined term "designated premises" it is not clear why the current Standard Licence Condition 6 - Classification of premises requires amendment. We therefore believe that this should not be adapted, as this would have consequential implications. However, we understand that Ofgem is clarifying definitions of domestic and non-domestic and associated obligations to resolve a situation where a domestic supply is included in a non-domestic environment e.g. caretaker's home within a school / college complex – in order to determine whether the property falls under the opt out scenario.</p>
Question 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.
	<p>No. The proposed and existing licence conditions are sufficient as roll-out obligations.</p> <p>However, SLC 12 (matters relating to electricity meters is currently under review and Ofgem is implementing various additional consumer protections. As such SLC 12 may need to be considered in respect of roll-out obligations.</p>
Question 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.
	<p>No. The existing legislation gives sufficient powers, with "all reasonable endeavours".</p>
Question 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.
	<p>Consequential changes to existing codes will emerge over the coming months, particularly through many new processes being developed by the BPDG. Some changes have been made in respect of AMR and some changes are being proposed for half-hourly settlements, but smart metering governance should sit in the SEC. The SEC should be established early then strengthened in an evolutionary way. All existing governance codes and the SEC should specifically recognise that the SEC takes precedence for all matters relating to smart meters – this management of "grey areas" will become increasingly important and needs to be stated from the outset.</p>

Question 24	Do you think that there are other requirements that the Government should adopt in the SMETS? Please explain your reasoning.
	<p>EDF Energy has concerns that the IDTS does not fully cover every aspiration of the Industry and furthermore is deficient in detail relating to some technical aspects of the design. Accordingly EDF Energy would like consideration to be given to the following:</p> <p>Carbon Dioxide (CO2) Display</p> <p>The primary objective of the Smart Metering Implementation Programme is to facilitate a reduction in CO2 emissions and green house gases through the reduction of energy consumption in the home.</p> <p>CO2 emissions measured by the current in-home displays are displayed real-time (Kg/h) to help consumers see the impact of their energy consumption. Evidence supports the proposition that the majority of consumers understand and are likely to be more responsive to energy demand if it is represented in monetary terms as opposed solely to that in units of energy being consumed or CO2 emitted. However, it is felt that the display of CO2 emissions will soon become much more important as government energy policy and the environmental agenda starts to become more visible to the consumer not least if consumers are given individual carbon targets and penalties for excess consumption.</p> <p>The prospectus describes the view regarding natural gas burned in homes. The calculation of carbon dioxide emissions is fairly standard as the amount of carbon dioxide emitted per unit of gas is the same no matter when the gas is used. For electricity, however, the amount of pollution caused by consuming a single unit of electricity varies depending on the generation mix. Some displays currently on the market use a carbon dioxide conversion factor based on the average grid mix. This, however, is an estimate and is not based on the preferred generation mix of their chosen supplier. Hence providing generic information in this way may lead to customer confusion for those who have opted for a low carbon or green tariff.</p> <p>EDF Energy is of the opinion that a customer purchasing a low carbon energy product from a supplier should be able to see the carbon impact of their purchasing decision. If a supplier is providing energy from low carbon energy source the consequential CO2 emissions will clearly be lower than those from an equivalent amount of energy provided by a supplier reliant on fossil fuel generation. The smart meter programme presents an ideal opportunity to make this apparent to customers by means of a carbon dioxide emissions indication on the IHD.</p> <p>Single Wallet Mode</p> <p>EDF Energy is of the opinion that dual fuel customers should be afforded the option of a single wallet PAYG/prepayment account. The benefit to dual fuel customers is that they will only have to maintain credit on one account and so will only need to make regular single transactions in respect of their energy requirements. Clearly customers will still have a choice and so can obviously choose to run separate accounts with respect to gas and electricity requirements. Customers should therefore be able to choose between a</p>

"Prepayment Standard" account in respect of each fuel or a "Prepayment Single Wallet" account relating to both gas and electricity. The exact technical considerations will require definition and EDF Energy will be prepared to provide more details as to requirements based upon previous work carried out within this area.

Interface Definitions

EDF Energy is of the view that the SMETS document needs to include a definition of all interfaces between individual elements of the Smart Metering Equipment. Interface definitions also need to be defined between the SME and parties external to it (DCC, opted out non-domestic Supplier, customer devices). These interface definitions need to be at a physical level (i.e. they need to precisely define the data and format of each interface and the protocols used to communicate).

Difficult Property Types

It is apparent to EDF Energy that an industry-wide solution for some difficult property types has not yet been fully investigated. For example, where a block of flats has meters in an intake room which are remote from each customer's premise and IHD no agreed solution has been investigated. This gives rise to the following concerns:

- i) Should all properties share the same WAN communications hub (data concentrator) with the outside world?
- ii) Should a (last mile) LAN be provided to link such a communications hub and its meters to customer's premises. If so, who should be responsible for the installation and maintenance of this LAN?
- iii) The DCC should be liable for the costs of the LAN
- iv) In this case, where should the demarcation line be drawn in terms of supplier and DCC the responsibilities?

Other Considerations

Further to the above EDF Energy views the roll-out of smart metering as an opportunity to correct many of the issues that beset the Industry in general. For example for many years there has been a concern that gas meter accuracy is greatly influenced by ambient temperature and pressure related to altitude. Consideration could be given to a study to see whether or not such doubts could be removed by fitting gas meters with compensation temperature and or pressure compensation devices.

The smart meter roll-out also brings in its wake possible concerns relating to the fact smart metering equipment will need to be installed in a range of different locations other than the usual meter intake position. Hence the design of smart metering equipment needs to take into account the need for smart metering equipment to:

- Suit the aesthetic requirements of the particular environment in which they are intended to be installed, customer kitchens etc.
- Be suitable for operating in a range of different environments, (for example communications hubs must be suitable for working in a wide range of temperatures associated with both indoor meter cupboards and external cabinets.

Equipment test requirements will need to take this into account.
As mentioned elsewhere in our response, the SMETS should include:
<ul style="list-style-type: none"> • Sufficient detail to ensure interoperability • A compliance and testing regime • Answers to questions such as WAN and HAN technologies

Question 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.
No. EDF Energy believes that there are requirements that should not be in the IDTS, and these are answered in other questions throughout the response.	

Question 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.
<p>We do not believe that ISO 27001 is sufficient for the DCC given the level of impact that a security breach of the DCC could have. In our opinion an impact level higher than 3 should be used for the DCC.</p> <p>We are also aware that the security requirements identified for opted out parties (i.e. those not using the DCC) are non-existent and requirements for the foundation stage are minimal. These two areas need to be addressed much more fully.</p>	

Question 27	Do you agree that the process outlined above is a suitable way forward to develop the SMETS? Please explain your reasoning.
<p>EDF Energy agrees that the process outlined for the further development of SMETS is sound. Clearly at this juncture there is a need to consolidate industry opinions in terms of consultation responses related to technical detail and additional requirements that were either previously overlooked, or that have been suggested as necessary further enhancements to satisfy possible interoperability and future smart grid initiatives. There is also a need to remove any duplication and more importantly any areas of contradiction from the document. Clearly the manufacturers' input to this process will be vital.</p> <p>Having regard to the amount of work that will be necessary in order to take account of all incoming consultation commentary, EDF Energy has considerable concern about the potential for delay. Furthermore, the outstanding technical issues (listed on page 37) and the sheer volume of work that will be required to consolidate all of the aforementioned input, gives rise to concerns that there might be considerable delays in making a reasonably comprehensive submission to the EU.</p> <p>There are also concerns about the differences of opinion still in need of resolution, such</p>	

as the establishment of an appropriate SMHAN standard, interoperability testing arrangements and the WAN Communication module design arrangements. Ultimately this gives rise to the possibility of a delay to the development of a fully compliant smart meter roll-out.

With regard to the technical specification, it is absolutely vital that the manufacturers are given a clear steer with regard to what they will be expected to deliver and to this end the early engagement of all likely participants (not just trade associations) is clearly essential.

Question 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.
	SMETS should be part of SEC from its inception. SEC should include, own and be accountable for SMETS from EU approval stage and should include a change control function and dispute resolution machinery plus an accreditation regime to ensure technical interoperability and no misuse of SMETS. This is a key responsibility of the SMIP to deliver. It will take some months to establish SEC so legalities e.g. Panel construction need to start now. Alternative arrangements would inevitably be weaker, resulting in ultimate adoption within SEC but with resulting difficulties to resolve. Right first time is the answer.

Question 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.
	<p>EDF Energy has not carried out a detailed analysis with regard to a 20 year cost projection. However, it is generally recognised that as manufacturers acquire production experience and demand increases electronic products do generally speaking reduce in price. Factors affecting this are technical innovations arising from Moore's law, improved component performance, technical innovation and the development of better production techniques. There are also reductions in price arising from improved mass production techniques and market competition.</p> <p>Analysis carried out within EDF Energy which considered the manufacturer's experience curve and optimal supply/demand scenarios suggests that costs by 2020 would be expected to reduce over time. However, our analysis further concluded that during the next ten years global demand will exceed supply and so cost reduction might not be as optimistic as might be expected in a fully unconstrained market. However, on balance this has led to the view that by 2020 an expectation of a cost reduction would not be unreasonable.</p>

Having regard to DECC expectations however our analysis would suggest that the assumed 13% reduction during the course of the next 20 years is possibly on the low side.

Question 30	Do you agree that the Government should include a requirement for a Communications Hub in the SMETS? Please explain your reasoning.
	<p>EDF Energy is generally supportive of the concept of a specific communications hub.</p> <p>EDF Energy agrees that the provision of a gas data mirror contained within a communication hub will ensure increased gas meter battery life.</p> <p>EDF Energy however prefers option 3b for the majority of situations. With regard to gas first installations it is accepted that there will also be a need for communication hubs of the 3a design. Please see also response to Q35 where a modular communication hub argument is proposed.</p> <p>It is also agreed that a modular communications hub will allow flexibility to use different application layers within the SMHAN and across the WAN.</p> <p>It is important that the communication hub design supports:</p> <ol style="list-style-type: none"> (1) bi-directional communications and interactive services (e.g. Messages to and from the IHD, or a prompted PAYG top-up action via the IHD) (2) the export of smart data to other screens in the home (via a bridging device or the communications hub enabling HAN or WAN export), and (3) the import of other non-smart data into the SMHAN (via the communication hub) or other HAN (via the customer gateway/bridging device) or web portal.

Question 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.
	<p>With regard to cost benefit analysis EDF Energy does not have access to relevant statistics related to current outages and so is unable to comment as to the validity of a positive business case.</p> <p>EDF Energy is of the belief that the additional costs associated with incorporating the functionality into the smart meter design should fall to the beneficiaries of the functionality, i.e. DNOs. Network Operators will derive the benefits in the form of improved fault response and restoration times resulting in reduced Customer Minutes Lost (CML).</p> <p>With regard to design it is agreed that locating the outage management circuitry within the communication hub is feasible providing the communication hub design is mains</p>

powered. Final architectural design will obviously have a bearing on exactly where the outage management functionality is located. Given that EDF Energy has a preference for a communication hub to be located within the electricity meter then assuming the view prevailed outage management would in effect be co-located within the electricity meter. However, if a standalone communication hub were to be deployed there is no reason why outage management could not be a feature of that design also.

EDF Energy also has some concern about the physical size of the supercap/battery storage facility necessary to support the 3 minute auto-reclosure delay.

With regard to cost benefit analysis EDF Energy does not have access to relevant statistics related to current outages and so is unable to comment as to the validity of a positive business case.

In order to avoid false alarms the final designs will need to take account of post installation maintenance activities requiring de-energisation of the supply. To this end an alarm de-activation facility will be desirable.

Question 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
	<p>EDF Energy does not agree that DCC Communication Service Providers should specify their requirements relating to outage detection. However, they should be involved in defining the solution. Differences in WAN technology will clearly lead to differences in outage management design. The clear implication of this is that different DCC Communication Service Providers will in effect be responsible for specifying outage management requirements. However it is important to recognise the following principles:</p> <ul style="list-style-type: none"> • The Government should be stipulating minimal outage management requirements and WAN choice should not interfere with this principal. • Where different DCC Communication Service Providers provide a service by means of the same technology then it is important that identical service provision is mandated. • The costs associated with outage management provision clearly need to be controlled. In effect this requires that the costs of outage management must be taken into account when considering different service provider options. <p>It is clearly vital that the services provided by DCC Communication Service Providers should be uniform in content and not be subject to any form of opportunistic pricing.</p>

Question 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.
<p>EDF Energy does not agree that restoration messages should be sent following a "last gasp" episode.</p> <p>With regard to restoration messages careful consideration needs to be given to the fact following a major outage a successful restoration will lead to a flood of messages such that the system will be unable to process every message. This could lead to uncertainty as to the extent of restoration. Given this fact, consideration could be given to designing the Smart Metering Infrastructure in such a way that notification of a restoration event is only sent from configured crucial nodes and endpoints. More localised faults could be dealt with by means of pinging, which basically requires the DCC to send a brief message and check for an acknowledgement. Pinging should be available at any time to authorised parties such as Network Operators.</p>	

Question 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.
<p>EDF Energy fully agrees with the Government's view that a fully integrated design will lead to electricity meter replacement issues. Should the highly probable possibility of the need to deploy an alternative WAN technology ever become necessary, such a design clearly would not meet the requirements of IM.3. It is also agreed that the fully integrated design will not meet the requirements of a gas only installation. However, EDF Energy does not agree that <u>all</u> metering equipment will need to be replaced. The action of fitting an electricity meter with a renewed WAN hub should not materially affect the SMHAN and therefore a previously installed gas meter with a compliant SMHAN hub should be capable of being paired up with a new SMHAN hub contained within a new smart electricity meter</p> <p>There appears to be an error in table 5, the text alludes to the fact that the fully integrated option is attractive because the day (1) costs are cheaper. However, the table depicts the day (1) costs as the highest at £7,225. However EDF Energy does accept the view that although day 1 costs are cheaper ongoing maintenance issues and expected WAN technology changes will lead to considerable whole life service costs.</p>	

Question 35	<p>Do you think the Smart Metering Implementation Programme objectives would be better met by:</p> <p>a. Using the SMETS to mandate a separate Communications Hub with a fixed WAN transceiver? Or</p> <p>b. Giving suppliers flexibility over options for configuration of the Communications Hub?</p> <p>Please explain your reasoning.</p>
	<p>EDF Energy does not support using the SMETS to mandate a separate Communications Hub with a fixed WAN transceiver.</p> <p>EDF Energy also doesn't agree with giving suppliers absolute flexibility over the choice of communication hub design.</p> <p>From an EDF Energy perspective it is felt that SMIP objectives would be best met by option 3b i.e. an electricity meter incorporating a removable communication hub featuring both SMHAN and WAN components. Although the incorporation of both SMHAN and WAN on the same removable hub module presents cost implications it is felt that the savings in terms of future flexibility far outweighs the cost of any SMHAN components that might be lost during a communication hub replacement exercise for WAN update purposes. From a manufacturing point of view the costs associated with producing a standardised communication module should be relatively cheap and could be outsourced by the meter manufacturers to the communication market in general. This will possibly serve to further reduce prices through market competition. The fact that SMHAN components will be contained within the same module will also provide some additional flexibility for future SMHAN development.</p> <p>With regard to the Government's position to support option 3A EDF Energy is of the opinion that the exclusive use of such architecture will lead to inflexibility and will give rise to considerable difficulties on site during installation and maintenance activities. Indeed it is estimated that the enforcement of an exclusive 3A solution will lead to additional national installation costs of approximately £243 million.</p> <p>As to the question of flexibility it is felt that suppliers should have a choice between of either option 3A or 3B. Although EDF Energy has a clear preference for option 3B it is felt that there will be circumstances where there will be a need for the wireless form of option 3A to support the needs of a gas only single fuel supplier. Option 3A however will be subject to difficulties arising from connection arrangements since OP.1 requires that such a hub will need to be powered from the unmetered main. This will require a connection direct to the main service head and so the installer will need to be accredited to the necessary MOCOPA standard. Customers will also need to be advised that although a smart gas meter only is being installed there will be a need to disconnect the electricity supply for a short period. There has been some suggestion that a battery powered hub of form 3A might be possible but it is felt that such a design is unlikely to be viable due to battery life issues. It should be noted that EDF Energy does not support the wired version of 3A since umbilical links have proven susceptible to illegal</p>

interference and present further installation difficulties.

It is felt that in terms of removable Communications Hub design it is important at this juncture to work towards specifying a standard form factor for a communication module package. Ideally the form factor that is derived should be of such a size that it can accommodate any of the range of different WAN/SMHAN technologies, this in effect will ensure that whatever is developed will fit in the standard form package and that the package can within reason accommodate future changes to the design. Furthermore, it is felt that if a standalone communication hub design of type 3a is to be developed, it should also be of a modular form and incorporate an easily removable communication hub of identical design to the type developed for option 3B. Such a feature will allow for the communication hub to be replaced without interruption to the customer's electricity supply. Additionally it should be possible to convert a single fuel smart gas installation to a dual fuel design by simply removing the communication module from the 3A communication hub housing and inserting it into the smart electricity meter which will accord with the design requirements of option 3B.

Question 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.
	<p>No we do not agree, we think there should be restrictions applied.</p> <p>EDF Energy agrees that the Smart Metering HAN has to conform to an EU or International Standard.</p> <p>EDF Energy recognises that a single solution for the HAN won't be able to cover all the GB property types, and that multiple solutions will be needed. We believe there should be a default HAN that in practice should cover the majority of GB homes, while one or two secondary HAN types may be required to address more exceptional circumstances. By limiting the number of HAN standards in use, this will assist in ensuring interoperability, and reducing overall costs to the energy sector, and the wider residential home energy management sphere.</p> <p>EDF Energy welcomes a testing approach during which all suppliers can test and share results to inform a HAN standards selection process especially for so called "difficult properties". This would provide valuable evidence in the selection process for primary and secondary HANs mentioned above.</p> <p>However, EDF Energy believes that the proposal to continue testing different HAN solutions after the commencement of Smart Change of Supplier is not appropriate. Smart Change of Supplier should only commence once:</p> <ul style="list-style-type: none"> • HAN solution testing and choice has completed; • equipment meeting the chosen standard(s) has been manufactured and tested for compliance and interoperability;

<ul style="list-style-type: none"> the equipment is available in bulk supply <p>If this is not the case, suppliers will be expected to support multiple standards, with commercial liabilities to do so.</p> <p>We would strongly suggest that unless smart metering equipment meets the HAN agreed standards, the equipment will not be eligible for Smart Change of Supplier.</p> <p>In addition to complying with the selected HAN standards additional companion standards should be developed to explain and detail how the standards have to be implemented for the GB market, in order to ensure true interoperability. The selected HAN standards and the additional companion standards would act as a basis for compliancy and interoperability testing.</p>

Question 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.
<p>EDF Energy does not agree with this recommendation.</p> <p>A failure to define or commit to any standard must not lead to the stranding of any SME, or excessively increase costs in order to ensure interoperability.</p> <p>The SMHAN is an example where it would be inappropriate to commence the process of 'being recognised' by 31 December 2014. DECC's "Impact Assessment with regards to the consultation on the Smart meter rollout for the domestic sector", dated 18 August 2011, has a central case estimating approximately 18% of installations completed by the end of 2014. Potentially, all of these meters could become stranded, or there would be unnecessary ongoing costs of supporting them. It is critical for the core SMHAN to be developed with final standards agreed and in place, with sufficient time for the supply chain to provide smart metering equipment in time for Smart CoS.</p> <p>Additionally there should be industry agreement regarding the roadmap for choice and development of all standards, determining the key dependencies. This process should be overseen by a central governing body.</p> <p>EDF Energy recognises that developing final standards in time for the main roll-out is likely to be impractical on the basis that not enough experience will have been gained and that at this juncture the final requirements for the SME are not yet fully known.</p> <p>Development of standards is best based upon operational experience and clearly such knowledge can only be obtained by acquired experience through system usage. Furthermore, the establishment of suitable standards is reliant on the pooling of combined industry knowledge and this factor alone will also lead to inevitable delay. Clearly there is a risk associated with such delays arising from the fact that the lack of any standard might lead to different interpretations as to the technical design. Given this situation it is clearly vital that as a minimum the industry should be looking to develop suitable draft standards in good time to allow suppliers to have the confidence to procure</p>	