Margaret Coaster
Smart Metering Team
Ofgem E-Serve
9 Millbank
London
SW1P 3GE

28 September 2010

Dear Margaret,

Ofgem Smart Metering Implementation Programme Prospectus
Responses to questions due 28 September 2010

EDF Energy supports the coalition Government's renewed commitment to delivering Britain's low carbon future. As expressed by Ministers, we also believe a range of solutions must be pursued, not just in delivering these targets, but in achieving a low carbon economy where the consumer receives tangible benefit. So while our commitment to decarbonising Britain's generation fleet through substantial new nuclear investment is well known, we also recognise the critical importance of engaging the consumer in managing their energy use and associated carbon emissions, and the vital role that Smart Metering will play in delivering this objective. Smart Metering will bring with it a paradigm shift in our Industry, empowering the consumer and providing the foundations for full end-to-end management of the Energy Infrastructure.

EDF Energy is fully committed to supporting DECC/Ofgem in planning and delivering the GB Smart Metering programme and we are passionate about ensuring its success. We have therefore framed our responses to this consultation around four fundamental principles which we believe are critical in underpinning success:

1. Placing a strong emphasis on health and safety
2. Minimising the cost to the consumer
3. Reducing risk through robust governance, effective planning and thorough testing
4. Delivering an optimal and enduring solution for the consumer and industry

In order to ensure the ultimate success of this ambitious programme, it is imperative that DECC/Ofgem ensure that the principles outlined above are incorporated into the programme.

EDF Energy would like to make some clear recommendations with regard to aspects of the programme as laid out in the Prospectus where we believe that the principles above must be considered.

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Governance

EDF Energy would recommend that a properly orchestrated and sponsored project is launched urgently, utilising formal project methodology, with clear definition of roles and responsibilities, resource planning, detailed project plan, and supported by a full Project Initiation Document (PID) and budget. It is vital that key stakeholders, particularly sponsors are recognised and bound into the Project through an appropriate Governance structure. EDF Energy believes that a programme of this magnitude must be built upon an optimal design, based upon the principles established by the Prospectus, and against a realistic timetable that accommodates the high level of quality needed to address the substantial risk exposure. We recognise that, to date, there has been no comparable rollout worldwide which has ended in success.

Timing

The EDF Energy proposal would be to base the timetable on a fast-track programme seeking to accelerate the overall delivery, and not create an artificial separation of 'interim rollout' and 'DCC'. A logical plan would determine critical paths and link all deliverables to a common set of objectives ensuring a coherent and stable programme. This planning exercise would seek to determine the earliest date that specific elements of the project could be implemented, examine dependencies and scope for improvement, and review the appetite from sponsors to increase risk and costs if a legitimate route to early delivery can be identified. EDF Energy would still expect the use of acceptance criteria (e.g. availability of meters via the supply chain) and 'go/no go' criteria to apply alongside a 'controlled market start', to maximise the opportunity to identify any risk of failure prior to large volume deployment.

We would seek to identify how best to de-risk the delivery of some elements on the critical path which may impact the successful delivery of the programme. For example any delay in delivery of technical standards will result in the supply chain being insufficiently mature to provide a choice of credible equipment at competitive prices and in sufficient volumes.

Through the implementation of the Smart Metering programme, Suppliers will need to deliver major changes to billing and other business unit processes. EDF Energy believes that these changes will be on a par with those delivered as part of the 1998 industry changes.

Interim arrangements

EDF Energy would strongly counsel against the creation of a non-strategic solution which would divert effort and focus from delivering an optimal long-term outcome. Rather, interim arrangements should form part of the overall delivery plan for the DCC and associated industry changes, and be implemented only if the plan can incorporate them as a logical deliverable. All functional requirements should be tested against a simulation of the DCC to ensure compliance, and both technical and commercial interoperability should be mandatory for any interim period.

EDF Energy would seek to accelerate the delivery of the DCC, and enduring industry systems, in order to negate the need for interim arrangements while still supporting the early delivery of benefits to the consumer. We would work with DECC/Ofgem to establish how this might be achieved, for instance through innovative approaches to DCC procurement and establishment.

Rollout

EDF Energy passionately believes that the rollout of Smart Meters must be carefully coordinated by Suppliers and the regulator in order to avoid the risk of major programme failure. The rollout should include a pilot phase where industry, consumers, Suppliers and the regulator can gain confidence that the GB rollout will be successful. This should be followed by a period of controlled market start-up where volumes are constrained and key stakeholders can share lessons learned whilst systems, processes, and the supply chain are tested at increasing scale. This would include the period leading up to the adoption of the DCC, allowing Industry, DECC/Ofgem and the Consumer Groups, to gain confidence and experience of the solution and associated new industry processes or systems. Failure to manage the opening of the market will result in a 'free-for-all' which may damage consumer confidence and result in high profile and costly failures with large volumes of meters installed. We must not act in haste and repent at leisure.

Provision of assets

Funding of assets is proving to be a significant challenge, driven by uncertainty over requirements and timing of standards, asset life, lack of technical and commercial interoperability, obsolescence and other factors. As a result, commercial funding partners are currently unable to provide Suppliers with off balance sheet, non-recourse funding. This means that Energy Suppliers and hence Customers, will be forced to absorb an increased element of risk/cost in relation to software and the technology components in the meter where sufficient confidence has yet to be established.

EDF Energy would suggest that many of these factors could be mitigated if the assets were owned by a regulated body, from whom installation costs could be recovered. Consideration should be given to utilising Network Operators in this capacity. This would normalise prices, potentially increase asset life, deliver interoperability through asset standardisation, provide structured change control, and secure the lowest cost of capital. While EDF Energy is committed to delivering smart meters on the basis of Ofgem's decision for a Supplier led rollout, the approach highlighted above would secure regulated and lowest cost provision of assets to the Energy Supplier. In addition, it would engage the Network Operator in the procurement of 'Smart Grid' related functionality and funding. At this time, EDF Energy regards this as the best option for ensuring lowest cost to the Consumer for the delivery of Smart Metering.

In summary, EDF Energy fully supports the introduction of Smart Metering into the British market. However, it believes that this must be done in an optimal way that delivers benefits to the consumer, and stimulates healthy competition. Failure to establish strong foundations through careful design, or rushed decision making, could lead to consumer resistance as a result of poor implementation and readiness, and a significant increase in costs through delays, redesign and revisits. This is an ambitious investment and

undertaking, and the Government, industry and the customer cannot afford to get it wrong.

EDF Energy is passionate about delivering the long term benefits of this programme for consumers and GB plc. We would seek to ensure that any intent to drive earlier delivery benefits is properly set against increased risk to the wider programme which could lead to an overall reduction of benefits or programme failure.

Furthermore, EDF Energy believes that significant progress has been made by DECC and Ofgem to date in building the programme's momentum and setting clear direction. However, at this critical preparatory stage we believe that it is important to agree the foundations for success before embarking on the next stage, and thus ensure that maximum industry commitment is secured.

Our detailed responses are set out in the attachment to this letter. This is a non-confidential response which can be published on the Ofgem website.

EDF Energy would welcome a meeting with Ofgem to discuss these concerns and consider how our proposals can assist in the successful deployment of Smart Metering for the benefit of GB Plc.

Should you wish to discuss any of the issues raised in our response or have any queries please contact my colleague Ashley Pocock on 07875112854, or myself.

Yours sincerely,

[redacted]

[redacted]

EDF Energy Response

DECC/Ofgem Prospectus Questions

28 September 2010

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Executive Summary

EDF Energy supports the coalition Government's renewed commitment to delivering Britain's low carbon future and in pursuing with vigour the ambitious emission reduction and renewable targets set out over the coming years. As expressed by Ministers, we also believe a range of solutions must be pursued, not just in delivering these targets, but in achieving a low carbon economy where the consumer receives tangible benefit. So whilst our commitment to decarbonising Britain's generation fleet through substantial new nuclear investment is well known, we also recognise the critical importance of engaging the consumer in managing their energy use and associated carbon emissions, and the vital role that Smart Metering will play in delivering this objective. Smart Metering will bring with it a paradigm shift in our Industry, empowering the consumer and providing the foundations for full end-to-end management of the Energy Infrastructure.

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We would seek to identify how best to de-risk the delivery of some elements on the critical path which may impact the successful delivery of the programme. For example any delay in delivery of technical standards will result in the supply chain being not sufficiently mature to provide a choice of credible equipment at competitive prices and in sufficient volumes.

Through the implementation of the Smart Metering programme, Suppliers will also need to deliver major changes to billing and other business unit processes. EDF Energy believes that these changes will be on a par with those delivered as part of the 1998 industry changes. As such it is that much more important to ensure a realistic timeline which sets up the overall programme, and related industry changes, for ultimate success.

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EDF Energy would strongly counsel against the creation of a non-strategic solution which would divert effort and focus from delivering an optimal long-term outcome. Rather, interim arrangements should form part of the overall delivery plan for the DCC and associated industry changes, and only be implemented if the plan can incorporate them as a logical deliverable. All functional requirements should be tested against a simulation of the DCC to ensure compliance, and both technical and commercial interoperability should be mandatory for any interim period.

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EDF Energy would suggest that many of these factors could be mitigated if the assets were owned by a regulated body, from whom installation costs could be recovered. Consideration should be given to utilising Network Operators in this capacity. This would normalise prices, potentially increase asset life, deliver interoperability through asset standardisation, provide structured change control, and secure the lowest cost of capital. Whilst EDF Energy is committed to delivering smart meters on the basis of Ofgem's decision for a Supplier led rollout the approach highlighted above would secure regulated and lowest cost provision of assets to the Energy Supplier. In addition, it would engage the Network Operator in the procurement of 'Smart Grid' related functionality and funding. At this time, EDF Energy regards this as the best option for ensuring lowest cost to the Consumer for the delivery of Smart Metering.

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Our detailed responses are set out in the attachment to this letter. This is a non-confidential response which can be published on the Ofgem website.

EDF Energy would welcome a meeting with Ofgem to discuss these concerns and consider how our proposals can assist in the successful deployment of Smart Metering for the benefit of GB Plc.

Should you wish to discuss any of the issues raised in our response or have any queries please contact my colleague [redacted]

Background

The DECC/Ofgem Prospectus was issued on 27 July 2010. This sought two different deadlines for responses. Questions on rollout strategy, implementation approach and functional requirements required responses **by 28 September 2010** to facilitate earlier decisions where this is possible and appropriate. The deadline for responses on the remaining questions is **28 October 2010.**

There are 39 questions where a response was required by 28th September. This document responds to each of those questions:

- 8 are set out in the Prospectus
- 10 in the Statement of Design Requirements
- 8 are in the Implementation Strategy
- 13 in the Rollout Strategy paper.

EDF Energy's responses reflect our view on individual questions based upon the Prospectus. However we would advise DECC/Ofgem that if changes were made to the overall programme in reaction to our recommendations above, then our specific responses would need to be reconsidered in the light of these changes.

Customer experience of Smart Meter rollout – Prospectus 220

220 - Q3 Do you have any comments on the proposed approach to ensuring customers have a positive experience of the Smart Meter rollout (including the required code of practice on installation and preventing unwelcome sales activity and upfront charging)?

EDF Energy believes that the Customer is the key to the successful deployment of Smart Metering, and that significant time and effort must be expended to ensure that both the introduction of Smart Metering to the Customer and their ongoing experience is of a high quality service.

- We agree with the need for an Industry Code of Practice (CoP) and have been working with the ERA and at Ofgem workgroups. We are developing our own Customer Charter and will be monitoring its use.

- This requires detailed training for installers particularly where they need to provide advice and services as agreed in pre-appointments. Suppliers should offer appointments but should be able to cold-call to fill any resource availability.

- We agree with the need for controls on sales activities during the visit, including during any early rollouts.

- We would wish to avoid warrants due to their prohibitive costs (approx £600 for the whole process).

- We agree the need to prevent upfront charging for a standard service. However, out-of-the-ordinary requirements (e.g. Sunday visit, value add products) should be chargeable at the discretion of the Supplier.

- We agree with the proposal for the Lead Supplier to install equipment and that shared use of WAN/HAN and will be reflected in the DCC charges to each Supplier. Ofgem should consider how a single visit for dual-Supplier sites could be encouraged. Failure to ensure only one visit will increase costs. Failure to share the IHD will increase costs. Suppliers will make bi-lateral agreements for courtesy installations. A single HAN per customer is required. Open standards for WAN/HAN/IHD will ensure interoperability.

- A process needs to be agreed to enable the 2nd Supplier to know what is installed prior to the visit. This will need a database in the DCC.

Smart Metering System Functional Requirements (225) and Prospectus (220)

220 - Q6 Do you have any comments on the functional requirements for the Smart Metering system we have set out in the Functional Requirements Catalogue?

- Our detailed response is in Appendix 1 & 2 within this document.

220 - Q7 Do you see any issues with the proposed approach to developing technical specifications for the Smart Metering system?

EDF Energy believes that development of a clear and unambiguous set of technical specifications for meters and other devices connected to the HAN is essential if Smart Metering is to deliver the intended benefits. This will be an enabler for interoperability and will ensure that devices connected to the HAN behave in an expected manner.

- We support the proposal to allow industry to develop technical specifications. How successful this is in delivering technical certainty and interoperability will largely depend on the governance arrangements surrounding candidate technical specifications.

- We support the use of a peer review group (the Smart Metering Design Group) to deliver the initial Technical Specifications. This approach adds time to the overall delivery of standards, but increases the likelihood of interoperability, as ambiguity and interpretation will be resolved collectively. This is especially true of any technical specifications for subsequent generations of metering once the SMDG has completed its' work and the industry enters a business as usual phase.

- Current arrangements for type-testing and approval of metering are based on legislation concerned with measurement and accreditation/approval by an independent, rather than seeking to deliver interoperability.

225 - Q1 Should the HAN hardware be exchangeable without the need to exchange the meter?

As a general principle, EDF Energy would like to see processes developed which prevent assets being removed unnecessarily. This will help to provide the level of certainty required for parties to obtain funding at reasonable rates and deliver greater cost benefit to GB PLC.

- It is easy to envisage some circumstances in which we might want to replace the HAN hardware only (e.g. faulty unit). However some concern has been expressed about citing HAN module failure as a reason for modularity, since such failures should be very rare. The pace of change of HAN communication technology will almost certainly outpace that of meter technology and hence the Industry clearly does not want to be changing meters unnecessarily. Consideration therefore needs to be given to the possibility of bridging technologies and backwards compatibility which will allow original HAN components to work with newer HAN components which employ newer/updated technology. This does not of course preclude remotely updating the HAN software.

- As with WAN modems, it is conceivable that this technology could be placed on a card or separate unit and made 'modular'. However, one of the key aspects of HAN radio components is their low cost, enabling them to be included in a range of devices. It is anticipated that thermostats, white goods and even light switches and door locks could become part of a HAN in a smart home.

- Consequently, unlike WAN modems – where there is likely to be one and at the most two per household, there could be a much higher incidence of HAN radios in a home – in meters, displays, generation meters, appliances etc. Unless all of these use a modular design, then there is a risk of creating technology islands for customers by upgrading the HAN radio for metering, rendering their own equipment incapable of interaction with the energy HAN (unless they invest further in a technology to bridge the old and the new solutions).

- In summary, we support the approach that HAN hardware should not be exchangeable without the need to change the Smart Meter. The design group should therefore identify when separate components should be replaced and when all devices need replacing together. This should be kept to a minimum due to issues of cost and inconvenience to the consumer.

225 - Q2 Are suitable HAN technologies available that meet the functional requirements?

- We do not believe there are any HAN technologies available today that fully meet the functional requirements. Some good candidates e.g. ZigBee do exist, but they still need further development.

- Furthermore EDF Energy has concerns that multiple HAN standards will lead to complexity. To minimise this issue the Industry should be looking to see if a suitable single HAN system can be developed and deployed nationally which suits all property types. This might require different communication media but the higher level applications should be identical. Development of any agreed HAN standards needs industry testing and co-ordination with EU standard definitions and be cognisant of EU timescales.

225 - Q3 How can the costs of switching between different mobile networks be minimised particularly in relation to the use of SIM cards and avoiding the need to change out SIMs?

EDF Energy believes that this issue is only applicable pre-DCC. We would like to see a market in which customers are not inconvenienced, costs are minimised and complexity of operation is reduced. Therefore we feel it is necessary to design a situation in which this switching does not need to occur, or is made as seamless as possible. Potential ways in which this can be achieved are described below.

- Whilst the initial rollout of Smart Metering may be based on cellular solutions as a result of an available infrastructure, this leading position could be quickly dissolved as other technologies, without a SIM card switching issue that adds costs, become accessible.

- It should be noted that the use of conventional SIM cards is likely to lead to contact failure as experienced in mobile phone technology and could lead to a large number of site visits to resolve loss of comms. An embedded SIM approach is essential if a cellular solution is to be adopted.

- It would be desirable to avoid a situation where contracts have to be novated between parties for comms provision on a COS, due to the added complexities this will create.

- We also believe there will be potential VPN issues where two different Suppliers share one modem. It may be difficult for the mobile telephone provider to split his service into two sub-networks and may require an intermediary to become involved on behalf of both Suppliers to route appropriate messages to the appropriate Supplier.

- There are a number of possible solutions for the use of SIM cards and avoiding the need to change out SIMs:

    - MAP or other agent to hold the contract with mobile telephone providers and charge Suppliers accordingly.

- Roaming SIMs - it is accepted that the mobile telephone providers might resist this option, but Ofcom support should be sought with industry backing of eventually installing some 50 million Smart Meters. However, if the eventual solution is not GPRS we need to temper our views accordingly.
- Another alternative could be to set up an intermediary agent to handle the aspects of the DCC ahead of it being deployed e.g. Electralink.
- Creation of multi-lateral contracts for Suppliers with all mobile service providers. Arrangements would need to be agreed for change of ownership at CoS. Even this option has its limitations with regards to security (no gatekeeper) and communications with more than one Supplier at site.
- Creation of a super agent for all SIM contracts, used by all Suppliers, but this may result in Competition Act (CA98) issues.
- We believe the SIM issue may only apply during the interim, as GPRS networks may not be considered suitable for the full scale long term solution. Therefore an expedient approach should be identified.

225 - Q4 Do you believe that the Catalogue is complete and at the required level of detail to develop the technical specification?

We support the statement of the functional requirements. However, a couple of areas will need further analysis:

- Data traffic analysis (bandwidth), priorities and scalability, particularly in peak times e.g. DSM messages are likely to be at times when the communications networks are at their busiest (4:30pm to 7:30pm)

- Demands of network / smart grid on communications / customer contact, in relation to service levels and who has priority, needs to be resolved, if inclusion of smart grid requirements has been agreed once a positive and comprehensive Cost Benefit Analysis has been completed.

- Further work is needed on the non-functional requirements, particularly in respect of Data Privacy/Protection/Security and the overhead associated with the successful management of the end-to-end 'System/Network Use cases', along with other System security functions.

- Additional consideration needs to be given to Taxonomy and data associated with enabling accurate monitoring of system usage and related costs, and its visibility to users.

225 - Q5 Do you agree that the additional functionalities beyond the high-level list of functional requirements are justified on a cost benefit basis?

EDF Energy supports the principle that additional functionality has to be justified on a Cost Benefit basis. We would also like to see the party gaining the benefit being required to pay the cost.

- With this in mind, we need to ensure that any additional Networks requirements have gone through a thorough Cost Benefit Analysis and are consistent with the ENA (Energy Networks Associations) own assessment of them. Our belief is that some of these requirements are only considered optional by the ENA, due to the added cost implications to the Smart Meter, which need to be considered with the benefit they will deliver. Another aspect that needs resolution concerns the added cost to reflect Network Operator requirements and how these added costs are reflected when Suppliers purchase meters. There should be a transparent charging mechanism to Network Operators to reflect their requirements.

- We expect all other meters e.g. water, heat, generation etc and other consumers equipment in the premise to communicate via the HAN, so long as they adhere to functional and technical requirements and standards, making the HAN a shared infrastructure through an open standard. It is vital that these requirements are justified separately through independent CBA and funded by their beneficiaries.

- We believe that the WAN Comms module should be modular within the electric meter, to overcome issues concerning power supply and space at consumers premise.

225 - Q6 Is there additional or new evidence that should cause those functional requirements that have been included or omitted to be further considered?

- We agree with the positions taken by the Programme and the statements in 3.37 and 3.38 (subject to our answers to Q5 above), and will continue to support the Programme, particularly on the functionalities rejected.

225 - Q7 Do you agree that the proposed approach to developing technical specifications will deliver the necessary technical certainty and interoperability?

EDF Energy supports the proposed approach to developing technical specifications, although there is a concern that the quoted development time of 6 to 9 months might be somewhat optimistic (see EU experience). We recognise that the specifications have been based on the work done by Suppliers in the SRSM Project, however we would observe

that a number of differences exist between this formative work and the minimum functionality.

- We agree with option 2 (225 – 5.16 P39) in the Statement of Design Requirements, due to the need for involvement by industry experts.

- We have supported the peer review group SMDG to deliver the initial Technical Specifications. This approach adds time to the overall delivery of standards, but increases the likelihood of interoperability, as ambiguity and interpretation will be resolved collectively. This is especially true of any technical specifications for subsequent generations of metering once the SMDG has completed its' work and the industry enters a business as usual phase.

225 - Q8 Do you agree it is necessary for the programme to facilitate and provide leadership through the specification development process? Is there a need for an obligation on Suppliers to co-operate with this process?

It is essential that a mandatory set of standards is agreed in order for technical interoperability to be established. This will have the benefit of increasing market certainty, reducing stranding and customer disruption and minimising cost for GB PLC. The programme needs to take the lead in establishing these standards.

- Failure to do so would lead to an industry "free-for-all" which could favour early movers who, by default, may create de facto standards that might end up becoming the norm, but may not be interoperable.

- In theory Suppliers will have to meet any mandated specification that this process produces and that alone should be sufficient to ensure their participation, since they will all want to be included in setting that outcome. Hence EDF Energy is broadly in agreement with the proposed approach, option 2 [225 – 5.16 P39]. There is a need to co-ordinate the process and this should be addressed by means of the proposed cross-industry/stakeholder expert group. Clearly Suppliers will need to co-operate with this group as will the various manufacturers and standards bodies.

- This requirement is linked to the need for formal testing and accreditation to confirm that any standards agreed are correctly implemented.

225 - Q9 Are there any particular technical issues (e.g. associated with the HAN) that could add delay to the timescales?

The establishment of technical standards is one of the most complex challenges facing the Smart Metering programme. We have identified a number of technical issues that may threaten timescales.

- One of the most pressing aspects is the need to prove HAN solutions are robust enough for varying premise scenarios e.g. tower blocks/flats with metering and WAN Comms module in the basement and IHDs etc in flats above, thereby potentially preventing an IHD from being issued to the consumer. We need to ensure adequate testing and eventual accreditation of HAN solutions capable of dealing with the varying premise scenarios to ensure robustness of HAN solution(s).

- An appropriate HAN standard is not ready. In particular the mechanisms for joining devices are not handled well – even by ZigBee.

- There is considerable concern related to the fact that the industry has yet to develop a suitable HAN standard for use in the UK. The proposed option to have a separate comms hub, which would then use HAN to talk to the electricity meter, represents a significant stretch of functionality beyond that which current standards have attempted to support. Traditionally the hub is either in the electricity meter or in some cases umbilically linked to a HAN/WAN module, which meant that the electricity meter (with complex functionality), is supported by the WAN protocols, not the HAN ones. Having the HAN support such complex features is a new requirement which could extend timeframes a long way. Conversely, keeping the hub within the electricity meter obviates this risk.

- We support the requirements for testing to ensure interoperability and security (HA.5; WA.4; SP.10). Business processes will break down unless all parties and devices are subject to rigorous testing.

- We believe this testing regime should extend to all elements of the HAN and all industry participants. Specifically this should include:
  - All meters
  - All comms gateways
  - All HAN/WAN controllers
  - All IHDs
  - Any MID approved smart microgeneration meters
  - Any MID approved smart sub meter associated with a specialised load such as an electric vehicle.

- In addition processes and data flows will need to be tested and accredited in a similar fashion to the process that was undertaken during 1998 programme.

These tests may all add an amount of delay to the overall timescales but are essential to ensure an orderly market.

- The standards and security requirements that will be specified will need to be policed. We would support an IFRS-type accreditation process wherein the HAN elements are certified, subject to work being done by the EU SmartHouse

Standards Steering Group. A policing mechanism/accredited body would also be required to guarantee continued connectivity, interoperability and security.

- Aside from interoperable interfaces, a number of design requirements are relatively new – and this may result in extended lead times before there is a choice of compliant metering products. Areas that could be considered as new or challenging include:
    - Modular design for WAN components
    - Prepayment/PAYG, particularly in the configurable manner required by the Programme
    - Economic and warrantable valves, switches and batteries – the physical components to support new universal mandatory requirements
    - Software (and firmware) to handle Smart Metering operations, from more complex tariffs to routing messages and information to the HAN.
- Finally, the fact that meter manufacturers' ramp up of development / production of Smart Meters to include agreed HAN standards/protocols at the same time as demand from the rest of the world is also growing may restrict the supply of Smart Meters, and extend lead times.

225 - Q10 Are there steps that could be taken which would enable the functional requirements and technical specifications to be agreed more quickly than the plan currently assumes?

We respect the ambition to empower customers with Smart Metering as soon as possible. However, we believe this should not be done at the cost of jeopardising the quality of the enduring solution. We believe that compressing the timescales further is likely to result in long-term problems for both industry and consumers.

- The design that emerges for mid 2012 must fully satisfy industry requirements in terms of HAN/WAN interoperability and system functionality. If the interim solution is to meet and transition to enduring requirements it is difficult to see how the design process can be shortened. We must ensure due diligence is applied to ensure that the Technical Specifications in particular are reviewed and understood by all relevant parties to maximise the opportunity to deliver interoperability.
- If the above requirements cannot be met then the development timescale should reflect this. If the use of external hubs is avoided then the work could be simplified and thus allow existing standards to be used, although clearly if external hubs are to be part of the longer term solution then the problem is simply postponed.

- We need clarity on functional requirements before we can define solutions. We do not support the idea of "minimum" vs. "extended" specifications because of the interoperability and stranding issues this will cause.

- At the same time, agreement on a technical specification does not necessarily represent the end date – adequate time needs to be allowed for development and testing of final products. Interoperability is delivered through a range of activities in different technology contexts; many of these types of activities are completely new to the energy industry. The Programme and the expert group will need to consider the use of such activities to deliver the certainty needed for technical interoperability.

- We support the establishment of a Design Authority to propose solutions for this area.

- Finally there is a need for definition regarding what is required for smart grids and how these costs are recovered? We do not want extra requirements to be added later, where these extra costs could have been avoided.

Implementation Strategy (234) plus Prospectus (220)

234 - Q1 & 220 - Q20 Do you have any comments on our proposed governance and management principles or on how they can best be delivered in the context of this programme?

EDF Energy would recommend that a properly orchestrated and sponsored project is launched urgently, utilising formal project methodology, with clear definition of roles and responsibilities, resource planning, detailed project plan, and supported by a full PID and budget. It is vital that key stakeholders, particularly sponsors are recognised and bound into the Project through the appropriate Governance structure.

We believe that a programme of this magnitude must be built upon an optimal design, based upon the principles established by the Prospectus, against a realistic timetable that accommodates the high level of quality needed to address the substantial risk exposure. We recognise that, to date, there has been no comparable rollout worldwide which has ended in success.

We would also expect the use of acceptance criteria (e.g. availability of meters via the supply chain) and 'go/no go' criteria to apply alongside a 'controlled market start', to maximise the opportunity to identify any risk of failure prior to large volume deployment.

- This formal governance should include the following, which might be considered for the next phase of SMIP:

- Adoption of a standard project methodology with independent quality assurance.
- Representation on the Programme Board and Review Board of those parties funding the programme (i.e. Suppliers).
- Detailed planning through an expert group.
- Regular publication of project documents (such as the project plan, status reports, and RAID logs) to key industry stakeholders, including Suppliers.
- A full and open ongoing review of the Business Case and associated Impact Assessments.
- Clear Terms of Reference for the Implementation Co-ordination Group including clarification of how its role should change as we move into the delivery phase of the Programme.
- A specification of how costs incurred will be attributed.

➢ We welcome the setup of the SMDG and DCG expert groups. However we believe an overarching, independent and enduring (Strategic) Design Authority must be established to ensure consistency and enforce standards between the various groups. This should be separate to any SEC Co. In addition, certain tasks (notably process and data design) may require a group that spans both groups rather than being a subgroup of either.

➢ These steps should ensure a robust and optimal design with zero optionality for processes and flows. Industry testing should then be used to ensure that all parties adopt design decisions to ensure a consistent market.

➢ Any cost recovery mechanism needs to agree the basis for smearing costs over time based on market share and the party gaining the benefit. As an example costs incurred to enable smartgrids should be borne by Network Operators.

➢ Finally, the SMIP programme scope should take account of experience in other countries, particularly the ten examples of where rollout arrangements have had to been restructured i.e. Holland, Victoria, France, California, Indiana, Maryland, Texas, Finland, New Zealand and Italy

➢ The scope of change is large and should not be rushed to ensure success of the programme. Failure to do this can bring significant risks, not least a media impact which is likely to dissuade customers from participation.

234 - Q2 Are there other cross-cutting activities that the programme should undertake and, if so, why?

The need for formal project governance has already been expressed. In addition, we believe the following "overall" activities should be initiated in addition to the various "programme" activities already identified:

- Firstly a group will need to be established to produce an overall industry process design. In the electricity market the MRASCo maps define the processes and roles of each party in those processes. These maps were not designed to cater for Smart Metering and will be made redundant by it.

- End to end industry processes will need to be redefined (for both electricity and gas) in such a way that parties have an unambiguous definition of what they are expected to do in each circumstance. These processes should then be enshrined in the various codes and legal documents either produced or amended.

- Secondly, a similar process needs to be followed to indentify industry data requirements and structures. This is required so that everyone can then design systems to both store and transmit data in a consistent manner. It is clear that the industry data structures will be more complex in the smart world (involving generation meters, WAN gateways, IHDs and lead Suppliers, for example) and no agreed model exists for how a meter point will look in either electricity or gas or the links between the two. Another example would concern the data required if and when registration is brought within the scope of the DCC. What data are we talking about and what are the underlying structures that support it?

234 - Q3 Do you agree with our proposal for a staged approach to implementation, with the mandated rollout of Smart Meters starting before the mandated use of DCC for the domestic sector?

Also linked to the following question below.

220 - Q17 Do you have any comments on our implementation strategy? In particular, do you have any comments on the staged approach, with rollout starting before DCC services are available?

EDF Energy believes the benefits of an interim solution prior to establishment of the DCC are far outweighed by the issues it creates based on the key dependencies listed below.

- There is a risk that this could lead to a sub-optimal outcome by constraining the design of the enduring DCC solution, creating unworkable interoperability arrangements, building barriers to smooth transition and increasing the risk of redundant investment.

- However we are exploring ways of delivering DECC's Impact Assessment, and the DECC/Ofgem Prospectus, in ways that would produce certainty and an optimal set of outcomes.

- In addition, whilst EDF Energy agrees that Suppliers deploying Smart Metering prior to the mandated rollout do so at their own risk, EDF Energy would like to

understand who bears the risk for the mandated interim rollout, in the event the dependencies and associated risks listed below materialise?

Interim Rollout and the DCC

The interim rollout if undertaken, should be regarded as a logical precursor to the enduring solution, and must not threaten it. For this reason, there should be robust requirements (e.g. for technical standards, data and process flows) to cover the interim period in order to guarantee the integrity of the data that will be migrated into the DCC. Implementation of these requirements should be tested, providing the industry with a clear set of go/no-go criteria. The interim rollout should not proceed until it can be demonstrated to not compromise the enduring solution.

- We would recommend that an "interim central solution" is considered to minimise impact when switching to the enduring solution.

- The sophistication of smart enabled Prepayment/PAYG arrangements (and the length of time required to agree and implement common processes and flows) may overly complicate interim arrangements. Prepayment meters should be specifically excluded from the pre-DCC mandated rollout. However, if prepayment meters are excluded from the interim rollout, the Smart Meters deployed in the interim should be capable of prepayment functionality in the enduring solution.

- Interim arrangements should support the minimum functionality (remote reads and asset tracking) which can be evolved into the DCC.

Security and Privacy

Security design principles and requirements need to be completed by the relevant 'Expert Group' and approved by the 'Privacy and Security Advisory Group' and the Smart Metering Implementation Programme. Associated standards must be defined before the interim rollout begins or the interim solution could be incompatible with the enduring market and require replacement e.g. if a Smart Meter cannot support agreed encryption standards.

- This security design needs to be implemented in available products and processes. Products that are purchased must conform to the design and be accredited to all required security standards.

- Interim Smart meters should not be rolled out until security is in place which is acceptable to all parties.

- All Parties communicating with Smart Meters (such as Data Retrievers, Suppliers etc., during any Interim Arrangements, and DCC for enduring) must be accredited, to ensure security and privacy is not compromised.

Testing

Any interim solutions must be tested and accredited. A party needs to be identified who will be responsible for this testing and accreditation. Testing is vital since any errors in interim processing will affect the enduring solution.

Planning

Thorough planning is required for the interim rollout including acceptable timescales for E2E testing and testing security provisions.

- The plan should take account of any delay to the enduring solution, any delay will result in increased costs to interim and if a 2nd visit is required then this will add greater costs and attract negative publicity which may risk the success of the enduring solution

Standards

The fact that the Smart Meter specification will be agreed is not, of itself, sufficient to prevent stranding. The following standards will also be required:

- WAN communications standards must also be agreed to enable installation of WAN module and avoid 2nd visits. The Prospectus requires the DCC to accredit the WAN module and if devices are found to be non-compliant all premises would require a 2nd visit to replace them.
- Independent interchangeable comms modules will also need to be available (i.e. are manufactured and available to purchase in volumes)
- HAN standard(s) also need to be agreed. Otherwise catering for multiple standards in a single meter will drive up costs.
- IHD and other devices linking to the HAN will also need to adhere to a common set of standards or will need to be replaced at a later date when these standards are published.
- Where such standards are published by the EU Great Britain will need to ensure compliance.

Media / consumer perception

It is essential that 2nd visits are not required for all meters deployed in the interim. Failure to achieve this will put consumer confidence and acceptance of the full rollout at risk. EDF Energy sees this as a key risk of the interim rollout.

Operational Issues

The installing Supplier is responsible for ongoing safety of equipment they install e.g. dangers from electromagnetic radiation.

- Dual Supplier sites will be particularly problematic. The industry needs to ensure a process is in place to ensure that on loss of supply for one fuel the IHD is capable of being independently updated by both Suppliers.

- Access to the electricity meter may be required to gain access to the Gas meter – the communications module must act independently which will not be required when the DCC is in place, and this, therefore adds costs for the interim.

- If the IHD is lost and a credit customer moves to prepayment, who is obligated to provide another IHD and who pays for it?

- Additional CoS rules will need to be in place for the interim:

    - The Incumbent Supplier must relinquish ability to communicate with the Smart Meter on CoS, noting we cannot link de-appointment to turning off the MDMS. We assume this would be done on a best endeavours basis
    - The new Supplier's tariff replaces incumbents
    - Suppliers must only have access to relevant authorised data
    - Closing and opening readings are aligned
    - Responsibility for IHD must be resolved
    - Processes must exist for seamless appointment of MAP and MAM agents
    - Processes must exist for robust tracking of assets – meters, comms module, IHD and power supply (for recharging IHD batteries)
    - All related Legislation and Governance arrangements should be reviewed and any required changes implemented e.g. UNC, IGT UNC, MAMCoP, SLC's. SPAA, BSCP's, MRA, DCUSA, contractual agreements – NGM / MAMs / MOPs etc
    - Agreement of clauses in customer contracts to deal with DPA issues

- EDF Energy does not believe a Supplier Licence Condition is required for targets and reporting. We will commit to our rollout plan and publish progress against it.

- In the event no early technical and commercial interoperability is achieved the following consequences are likely:

    - Possibility of a breach of Competition Act 98 since customers will be unlikely to change if Smart Metering is not interoperable
    - Suppliers will still have Data Retrieval costs where they are unable to utilise Smart Metering
    - Customer confidence in the overall programme may be threatened where Smart Meters are installed which do not work, particularly after a Change of Supplier
    - The incoming Supplier may have to use as the Smart Metering System as dumb rather than smart

- Clarity is needed on requirements for unmetered sites. Will they require Smart Metering and if so when are they expected to be rolled out?

220 - Q18 Do you have any other suggestions on how the rollout could be brought forward? If so, do you have any evidence on how such measures would impact on the time, cost and risk associated with the programme?

We do not support the acceleration of the rollout programme as we consider the benefits of further acceleration are outweighed by the increased risks and resulting costs. Discussion of acceleration should focus on the timing of testing, and bulk installation once the DCC has been successfully established. EDF Energy is prepared to consider acceleration of the availability of the DCC provided that this does not jeopardise the quality of the programme or trigger unacceptable risks.

- Due to the complex nature of the programme it is not clear to us that this can be achieved. We would like to see a more detailed plan for both the overall rollout and the interim period, to demonstrate that the targets currently specified are achievable. Without such a plan, it is hard to propose how any acceleration can be achieved with confidence.

- Particular concerns relating to bringing the rollout forward are:

    - Interim arrangements require industry processes & flows to be agreed (e.g. for COS), particularly to ensure the integrity of settlements and the eventual enduring solution.
    - Following agreement of standards the industry will require time for manufacture/ procurement.
    - Interim mandated rollout must not occur until agreed (currently planned summer 2012)
    - The DCC is still on the critical path, even with the phased go-live, since it will impact all planning and may introduce additional risk where it is delayed.
    - EU standards are estimated to take 3 years to complete. Ofgem expectations may therefore not be met.

220 - Q19 The proposed timeline set out for agreement of the technical specifications is very dependent on industry expertise. Do you think that the technical specifications can be agreed more quickly than the plan currently assumes and, if so, how?

We believe that mandatory open standards for all elements of the Smart Metering rollout should be developed as soon as is practicable. However, given that the effect of this work will be felt for many years it is essential that "correct" and unambiguous standards are developed which have EU approval. It may not be possible to compress these timescales further.

- Development and agreement of technical specifications could be helped by more effort being focussed on the expert groups, and perhaps through Ofgem representatives participating proactively in Zigbee and other open groups. In addition, work done by other groups (e.g. SRSM and international bodies) should be incorporated where possible.

- However, there is a sensible limit to how quickly this process can proceed. Acceleration of standards is likely to result in sub-optimal solutions and would also divert key resources from other aspects of the program. There is a clear need for specifications to be carefully checked and agreed due to the very significant equipment costs that will be based on these standards. Failure to do so could result in meters and/or other equipment having to be replaced.

- Also, any standards must be European Norms, or they won't be recognised as valid. Failure will result in a delay to the rollout.

234 - Q4 Do you have any comments on the risks we have identified for staged implementation and our proposals on how these could best be managed?

EDF Energy passionately believes that the rollout of Smart Meters must be carefully coordinated by Suppliers and the regulator in order to avoid the risk of major programme failure. The rollout should include a pilot phase where industry, consumers, Suppliers and the regulator can gain confidence that the GB rollout will be successful. This should be followed by a period of controlled market start-up where volumes are constrained and key stakeholders can share lessons learned whist systems, processes, and the supply chain are tested at increasing scale. This would include the period leading up to the adoption of the DCC allowing Industry, DECC/Ofgem and the Consumer Groups, to gain confidence and experience of the solution and associated new industry processes or systems. Failure to manage the opening of the market will result in a 'free-for-all' which may damage consumer confidence and result in high profile and costly failures with large volumes of meters installed. We must not act in haste and repent at leisure.

EDF Energy believes that staged implementation introduces a number of additional risks to the delivery of Smart Metering as follows:

- The proposed "management" of the security risk – "[ensuring that] Suppliers comply with all framework requirements relating to the Smart Meter rollout, including those in respect of data security and privacy and all applicable consumer protection measures" in reality only assigns the risk to Suppliers (as opposed to "managing" the risk). It does not provide a mechanism for ensuring that Smart Metering systems are secure and that only authorised parties' access the meters for authorised purposes. The task of ensuring security still remains and it is considerable.

- Mandated rollout must not commence until full commercial and technical interoperability is in place. We agree with the risks listed in paragraph 5.11, but have identified the following related risks:

    - The supply chain has reached sufficient maturity.
    - Where Suppliers are unable to meet mandated targets, they may suffer financial penalties (and possibly a SLC breach).
    - The cost to GB PLC may be increased by investment in temporary solutions which are thrown away once the DCC goes live.
    - Sufficient security measures are not in place due to different Suppliers deploying different platforms and software. Generally the more parties involved the higher the security risk, which could lead to tampering issues, and ultimately be open to terrorism threats. EDF Energy are aware of approximately 70,000 customers nationally who are illegally charging Prepayment keys, which is increasing by 1,000 customers per week. Indeed, EDF Energy has tested Smart Meters and been able to tamper with them, adding credit and disrupting readings (and can provide details confidentially if required). This is the one of the reasons EDF Energy believe an integrated modular communications module is the safest way to go. Lack of adequate security measures in the interim could pose a significant national threat, depending on the size of the mandated interim rollout.
    - Costs could be incurred for 2nd visits to change comms modules in the event they fail DCC certification for the enduring solution, plus the costs associated with asset stranding of the failed WAN module.
    - In the event the above risks materialise, we believe this would be a significant risk to the rollout for the enduring solution, due to poor consumer perception of SMIP, and could ultimately affect Suppliers' ability to gain access to install Smart Meters. EDF Energy is mindful of the privacy issues in Holland which delayed rollout for approximately 6 months.
    - If standards are not agreed, the interim solution will have meter specific communications modules and therefore every manufacturer has to have a module for every type of communications service. We assume Suppliers would not be mandated to deploy Smart Meters in the event standards are not agreed, and seek clarity from DECC / Ofgem on this point.
    - The cost for the interim solution could be significantly higher than enduring solution due to short timescales. It is expected Service Providers would charge a premium for a short term contract, in the event they are willing to support a short term solution.
    - Lack of industry / volume testing may fail to identify possible faults which could lead to catastrophic failure e.g. component failure in IHD, meter or associated product. EDF Energy has had a previous experience (in 2008) wherein a problem on site in a power supply unit associated with a communication hub alerted the company to a design fault. This led to a retrofit situation leading to the need to visit over 800 sites in order to carry out the manufacturer's recommended corrective action. More recently a

number of Suppliers have experienced failures in power supply units associated with IHDs. This had led to a general product recall which is currently on-going.
    - Suppliers may be unable to procure comms services with variable termination clauses. The current plan for delivery of DCC looks high risk. EDF Energy are concerned that they maybe unable to procure communications services at all regardless of termination clauses.
    - Suppliers may be unable to novate interim comms contracts.
    - If implementation of DCC is delayed for whatever reason, this would result in increased costs of operating the interim solution (e.g. support staff will need to be mobilised until the DCC is in place) which the customer will ultimately pay for.
    - A "Big Bang" switchover to the DCC would be high risk due to the high volume of the interim rollout (6% of meters changed = 2.88 million).
    - We seek clarity on how communications costs will be agreed and what options are available in the event they cannot be agreed.

- EDF Energy notes that an appeal may be made to the EU to object to interim rollout, which may further compromise arrangements.

- We recommend the following controls should be implemented prior to the mandated interim rollout:
    - Full commercial and technical interoperability must be in place
    - Sufficient security measures must be in place for all Service Providers including their platforms and software.
    - Early agreement of comms module certification requirements is required ensuring the comms module is operational with all comms services
    - Assurance on minimal costs for interim
    - Thorough volume industry testing for interim
    - National Education programme to advise on any limitations of interim and assurance no further visit is required
    - Generic churn contracts for meter and comms assets agreed with all comms Service Providers
    - Generic and variable novation clauses agreed with all comms Service Providers
    - Phased transition plan for switch to DCC including controlled market startup.

234 - Q5 Do you have any other suggestions as to how the rollout could be brought forward, including the work to define technical specifications, which relies on industry input?

Please see our response to the supplementary consultation from Ofgem on this.

- It is essential to have agreed meter, HAN, WAN technical standards (planned by winter 2011) including any requirements for DCC certification
- EU agreement is unlikely by then based on current progress (estimate may take 3 years)
- A definition is also required for interim industry processes and flows e.g. CoS
- The rollout will require time for manufacture/ procurement after agreement of standards has been achieved
- Interim mandated rollout must not occur until agreed (currently planned summer 2012)
- It may be possible to accelerate specifications through more focused expert groups. However care must be taken to ensure quality; note however we cannot accelerate the agreement of standards through the EU process.
- Acceleration of standards is likely to result in sub-optimal solutions which require subsequent revision leading to increased costs and would also divert key resources from the enduring program which is a significant risk.

234 - Q6 Do you agree with our planning assumption that a period of six months will be needed between the date when supply licence obligations mandating rollout are implemented and the date when they take effect?

EDF Energy agrees that *at least* sic months is required for this process. We have other concerns on the implementation plan covered under Question 7. However, with regard to the six months for planning and procurement, EDF Energy will need to -

- Get sign-off for our "blueprint" for the full solution, which cannot happen until Q4 2011 / Q1 2012 since it is dependant on receipt of standards (design decisions will be dependant on compliant products available, the IHD which meets the standards and the MDMS)

- This will constrain our ability to put in place robust systems in the interim which we are confident will be enduring

Therefore the foundation layer we are able to implement for summer 2012 will be, at best, limited to being able to install Smart Meters with perhaps workarounds to allow interim interoperability for CoS.

- EDF Energy believes that any interim solution must:

    - Technically form part of the end state solution
    - Be based upon a commercially equitable position where all retailers have equal information, equal commercial arrangements and control over the direction of the solution
    - Must ensure fair treatment of data / comm's suppliers in selection in both form and substance and must mitigate any risk of challenge

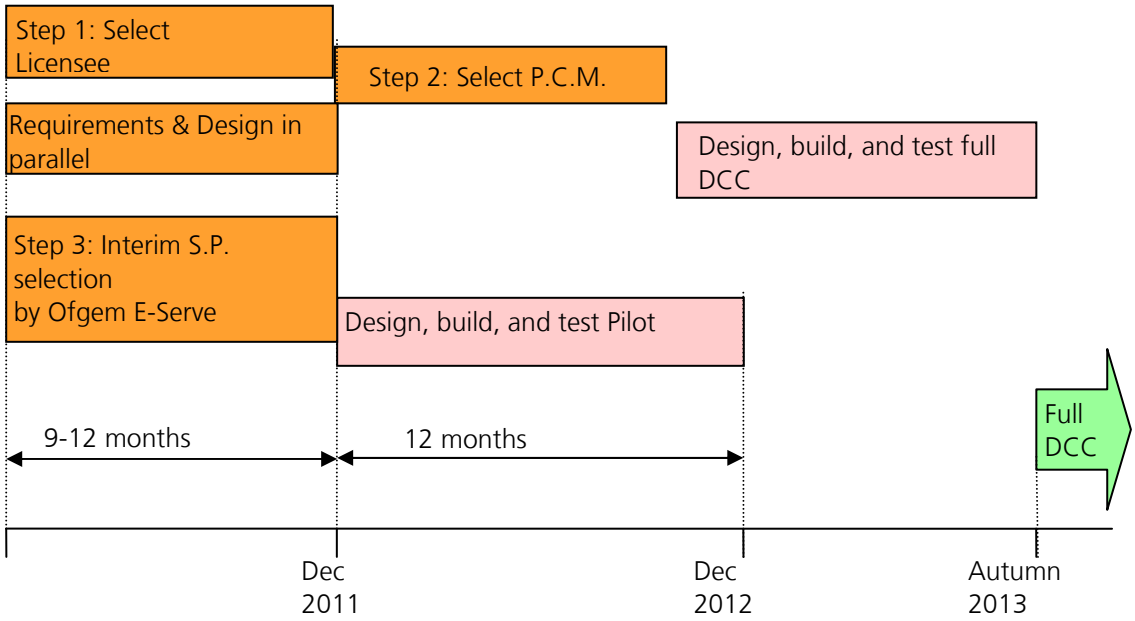
- Early adoption / selection of the ultimate service providers is the best way to do this as migration / novation from other service providers or solutions is likely to be unworkable or uneconomic. Supply market engagement is absolutely essential to ensure fair consideration is made of all associated issues

- Ofgem e-serve could act to procure in the interim prior to licensee selection by putting in place Service Provider contracts on an interim basis with full industry participation; removing dependency on selection of Licensee; has advantages over retail company re legal restrictions i.e. all parties would not have to "agree" to use interim central solution; could mandate through SLC's; E-Serve could novate contracts to licensee when in place.

- Steps 1 (selection of Licensee) and Step 3 (selection of Data and Communications Service Providers can be undertaken in parallel

- Further optimised by starting requirements definition and DCC design at the same time
- Would deliver a "phase 1" Pilot (interim solution) 6 months early based on limited services / functions agreed for the interim
- Followed by a second delivery for the complete scope of the DCC.

The following diagram explains this:



- The benefits of the proposed approach are:

  - Optimal delivery - provides an interim / early rollout in a controlled manner
  - Minimises costs – Pilot solution re-used for enduring and costs associated with transition minimised
  - Easy to integrate and operationalise – DCC does not currently exist and can easily be aligned to existing Industry flows
  - A step towards the DCC and therefore does not undermine enduring arrangements
  - Secure solution with access from Head end to meter controlled centrally
  - Same secure services offered to all incorporating privacy requirements – best customer experience
  - Minimal change to existing industry processes and flows
  - One participant cannot prejudice the interim arrangements - *commercially or technically* – not reliant on early mover solutions tailored for specific Supplier requirements, all interim services available to all Suppliers
  - Evolution of services in the intervening period is available to all Suppliers equally

- Robust arrangements – one central solution can utilise variety of resource and expertise and forces alignment of Supplier requirements as early as possible
- Pre-cursor to DCC therefore simplest transition / migration to enduring DCC
- Can centrally accommodate Smart Grids – not dependent on multiple parties' interpretation of any additional requirements.

234 - Q7 Do you have any comments on the activities, assumptions, timings and dependencies presented in the high-level implementation plan?

EDF Energy believes that a robust plan with clearly understood dependencies should be developed and published which would establish critical paths for key programme elements. Particular concerns around the current timescales are:

- Any delay in delivery of technical standards will result in the supply chain being not sufficiently mature to provide a choice of credible equipment at competitive prices and in sufficient volumes.
- The target of having a fully-operational DCC 6 months after its appointment is extremely ambitious.

For EDF Energy the delivery of systems to meet DECC/Ofgem's timeline represents a major challenge to the business and we believe other Suppliers may be in a similar position. EDF Energy's draft plan for delivering robust, quality solutions to meet the 2012 and 2013 delivery is unreasonably tight with no slack, and we are already trying to fit tasks into a shorter timescale than we consider reasonable. This implies a significant risk of consequential operational failures, which will be increased further if DECC/Ofgem either accelerate deadlines or increase the minimum requirement for either milestone

- Operational failure at this stage would be very damaging to the SMIP, EDF Energy and potentially other Suppliers. EDF Energy believe delivering the 2012 requirements is a distraction from work on the 2013 deliverable, although we would of course do our utmost to comply with Government requirements. EDF Energy believe 2013 is very difficult for DCC go-live given the DCC Service Provider is appointed only 7 months earlier (see rationale below). DCC go-live will therefore overrun, causing an extension of the interim solutions life, but more importantly the scale.

- EDF Energy recommends the SMIP should develop a detailed plan through an expert group to ensure a realistic and achievable plan is in place to ensure the success of the SMIP. We recommend the inclusion of quality gates, as per our own EDF Energy's Project Way (EEPW) methodology.
- We consider that the existing lack of competition in the Smart Meter manufacturing market (with currently only two credible players) is likely to increase the risk of supply chain constraints, prices hikes and product recalls. EDF Energy believes that the market for Smart Meters needs to mature so that there are multiple competing products available to Energy Suppliers. Further acceleration of

rollout will exacerbate this situation, as the demand for meters will increase rapidly before the market has a chance to mature.

- Please see earlier response re interim rollout plan.

- **Rationale:**

  - Spring 2013 DCC SP appointed (end March?),
  - Autumn 2013 mandated use of DCC (end October?),
  - The plan implied within the Prospectus therefore provides **7 months to** design/build/test the national communications infrastructure to support 46 million end points, design/build/test the central systems and processes, and pilot and open them to industry. The more detailed considerations would include:
  - Review DCC requirements (assuming they are already drafted and agreed) – we recommend this is done in advance
  - Define logical model i.e. E2E BP's and supporting Data model – we recommend this is done in advance
  - Establish DCC assurance procedures & body – can this be done in advance?
  - Design solution – can this be done in advance?
  - Procure IT equipment
  - Establish IT and Telco contracts (we assume the IT Operation will be sub-contracted)
  - Build solution (including asset database)
  - Test solution internally
  - Undertake Industry process testing including Supplier interface testing
  - Get the Business ready for go-live
  - Complete any training
  - Agreement of accreditation / certification requirements
  - Undertake accreditation / certification
  - Establish business continuity and disaster recovery procedures and facilities – approved and tested

- These points also apply to any mandated interim rollout.

- The programme should reflect on the 6 month delay to the Ontario central MDMS project due to design issues and the 18 months taken to develop and implement systems, noting this was only the MDM platform (head ends and communications were handled by the DNO's). See following link for details

  - **http://www.smi-ieso.ca/SMSIP_Working_Groups/Terms%20of%20Service%20Walkthrough%20Session-Sept-30-2008.pdf**

- We do not believe the DCC should be responsible for defining the approach to industry testing. (See 229 Regulatory and Commercial framework question 4 response re DCC running its own governance). This should be the responsibility of an Authorised Body overseen by the relevant governance body.

- There should be a formal workstream within the Implementation Programme solely responsible for defining, developing and carrying out all of the necessary Industry Testing and Accreditation to ensure participants, systems and components e.g. WAN/HAN/IHD etc enter the Smart Metering market in a controlled manner. This may include a number of activities in which the DCC is a very minor player.

- We believe the "Interim arrangements" project phase should be replaced by a coordinated testing phase to underpin DCC go-live success.

234 - Q8 Do you have any comments on the outputs identified for each of the phases of the programme?

In general terms we support the outputs identified for the project phases, but have a number of exceptions and additions which are detailed below:

Phase 2

- With regard to the phase 2 outputs EDF Energy does not believe SLC's are required to ensure targets profiles are met and does not believe benefits need to be reported. EDF Energy will commit to report on progress against our rollout plan.

- EDF Energy agrees with the other outputs listed for phase 2 but also believes the following are essential –

    - Interim arrangements should be a pre-cursor to DCC (i.e. an interim central comms service in place and working) including technical (HAN and WAN) and commercial interoperability (MAP, MAM and comms arrangements)
    - Robust error and failure process in place
    - Must include WAN standard to enable installation of WAN module and avoid 2nd visit but Suppliers should have flexibility to utilise in the interim at their own commercial risk
    - Independent interchangeable comms modules are available
    - HAN standard(s) is/are agreed
    - Any interim solutions must be tested and accredited – a body needs to established to facilitate this
    - Installing Supplier is responsible for ongoing safety of equipment they install e.g. dangers from electromagnetic radiation
    - Plan should take account of any delay to the enduring solution

- Exclude PPM arrangements from interim solution due to complexity and unavailability of infrastructure
- Security designs complete and approved by 'Privacy and Security Advisory Group' / SMIP
- Interoperability standards issued by EU and agreed / adopted by SMIP
- Standards for SM and IHD (adoption of EU standards) approved by SMIP
- Security design (above) implemented in available products
- Products must be accredited to security standards
- Additional CoS rules in place –
    - Incumbent relinquish ability to communicate
    - New Suppliers tariff replaces incumbents
    - Suppliers only have access to relevant authorised data
    - IHD provides CoS readings and cannot be remotely disabled
    - Closing and opening readings are aligned
    - Resolve responsibility for IHD
    - Seamless appointment of MAP and MAM agents
    - Robust tracking of assets – meters, comms module, IHD

Phase 3

With regards to the Phase 3 outputs, we have the following comments:

- EDF Energy supports controlled/phased market start-up, synchronised across all Suppliers to ensure the National Publicity Campaign is effective and consumer experience is secured.
- We agree with the outputs of phase 3 but believe the current plan cannot be achieved in the current timescales.
- EDF Energy would like to understand how migration will be managed to the enduring solution, in particular how legacy and interim solutions will be migrated
- EDF Energy believe it is essential to have volume testing of Industry readiness prior to any mandated rollout
- Industry simplification should only be an output where the Industry has demonstrated a positive business case (CBA)
- Smart grid developments should be subject to their own program but co-ordinated with the SMIP
- We will report on rollout progress against our Ofgem agreed rollout plan but do not believe enforcement action is required.

Rollout Strategy (228) and prospectus (220)

220 – Q16 Do you have any comments on the proposals for requiring Suppliers to deliver the rollout of Smart Meters (including the use of targets and potential future obligations on local coordination)?

EDF Energy's recommendation was for a DNO-led rollout. Given the decision to make the rollout Supplier-led we believe there are significant challenges around local co-ordination and we recommend further analysis before any decision is made to co-ordinate or not. In particular we have the following thoughts:

- No minimum targets should be employed, and definitely not until DCC fully operational and participants systems accredited
- Interim licence conditions would be difficult to enforce within timescale and may attract legal reviews
- Targets need to be agreed not imposed. We are prepared to look at prioritising groups but want flexibility to make choices in this area
- Targets should take account of churn i.e. where Suppliers may have lost a significant percentage of Smart Meter customers
- Flexibility will need to be maintained to minimise costs as advised and to maintain the business case

228 - Q1 Do you believe that the proposed approach provides the right balance between Supplier certainty and flexibility to ensure the successful rollout of Smart Meters? If not, how should this balance be addressed?

We agree that a Market led approach providing the Suppliers with flexibility to define their own rollout plans and be responsible for the prime contact with the consumer is the right approach. However, careful consideration needs to be given at the point the programme team plans to review the progress and, depending on the outcome, potentially propose that further measures should be used.

Whilst other factors may seem attractive to target, such as different objectives of the programme or different sectors that may benefit in different ways, it is likely to be counterproductive to introduce other targets before the cost of implementing them, or the benefits they may deliver are thoroughly understood. Targeting additional factors, by definition, would make constraints on, and add costs to, the Suppliers' cost effective programme. It is imperative that Suppliers are involved throughout the whole of the review process.

228 - Q2 Would the same approach be appropriate for the non-domestic sector as for the domestic sector?

In general terms we believe that there should be one market structure for Smart Metering. Wherever different processes are used, complexity and cost will be added.

- Therefore, the non-domestic sector should follow the same principles as the domestic sector for the rollout. Any other solution would potentially cause confusion in the market. Obligations, if imposed should be aggregated across domestic and non-domestic.

228 - Q3 Is there a case for special arrangements for smaller Suppliers?

We believe in a standard set of industry rules which should be applied in a fair way to all parties. Any special allowances could be construed as being discriminatory.

228 - Q4 What is the best way to promote consumer engagement in Smart Metering? As part of broader efforts, do you believe that a national awareness campaign should be established for Smart Metering? If so, what do you believe should be its scope and what would be the best way to deliver it?

We support the ambition to encourage customer engagement with the Smart Metering Programme but are not yet convinced that a national awareness programme will delivery value for money.

- Funding a National awareness program will be a significant cost to our Smart Metering Programme (possibly £13 million cost to EDF Energy). We see no requirement for the quoted level of national programme noting Suppliers requirement to have an installation CoP. However, if there is evidence that more effective access rates are achieved through a national campaign then EDF Energy would consider supporting this, providing it did not constrain Suppliers' flexibility on rollout.

- Some research needs to be carried out in terms of what would discourage customer pull with the national campaign utilising results. We believe the best way to promote consumer engagement is for the Smart Meter installation and operation to be seen to be successful, good information to have been provided to customers and consumer groups at the appropriate times and for Smart Metering not to have been oversold. The customer needs to be made aware of what they are going to receive in terms of equipment, particularly the IHD

- Other potential options could include:

    - Include generalised OFGEM/DECC webpage with FAQ's and helpful links.

- TV/Radio/press advertising campaign and the use of bill stuffers
- Consider a national help-line, which could answer a variety of questions agreed between Suppliers. Although as the rollout will be Supplier led, this interaction is probably best managed by the Suppliers themselves.

➢ A "Smart Metering brand" logo could be introduced in addition to companies existing branding (e.g. cars, vans, uniform etc), but since customers are already aware of Supplier branding and the confidence this brings on Meter Operator visits this could lead to confusion. However we note the intention to further explore initiatives in this area and any requirements agreed should be subject to a full cost benefit analysis including the appropriate supporting research.

228 - Q5 How should a code of practice on providing customer information and support be developed and what mechanisms should be in place for updating it over time?

EDF Energy believes that the most appropriate way of developing a code of practice is through a collaborative process involving all parties that will be required to comply with the standards and requirements within the code. Such an approach should ensure that standards are developed that both meet the aspirations of all parties, and that those standards can be delivered.

➢ It is important that the code of practice details the minimum standards that should be expected for the installation of Smart Meters. We fully expect that this is an area where individual Suppliers will want to distinguish themselves in the competitive market, and as such will develop their own internal standards that exceed the minimum requirements as set out in the code.

➢ Any such code of practice will need appropriate governance arrangements underpinning the requirements and obligations contained within it. These governance arrangements should allow the code to be subject to feedback, review and update especially in the early part of the rollout.

228 - Q6 Do you agree with the proposed obligation on Suppliers to take all reasonable steps to install Smart Meters for their customers? How should a completed installation be defined?

The obligation for Suppliers to take all reasonable steps to install Smart Meters for their customers is reasonable, subject of course to a suitable definition and the test of reasonable steps and acknowledging that this test is likely to change over time as the rollout progresses. Lessons are likely to be learnt by Suppliers as the rollout begins to ramp up. However, any targets set must take failures into account where reasonable

steps are taken.

- EDF Energy believes that defining a completed installation will add clarity to the installation process and avoid re-visits where issues surface later. We also have the following points:
    - We agree that further work is required on pre-DCC installations and sites where the customer refuses an IHD
    - PPM/PAYG functionality should be fully operational
    - As a minimum the Smart Metering installation should be defined as a system related to one single fuel and specific components make up that definition i.e. Smart Meter, communications module, IHD (accept where refused, or alternative medium used e.g. web), HAN, WAN (where available should technical issues initially prevail) and finally information and advice to the consumer.
    - A definition is required for "appropriate advice to consumer at installation"

- Targets should not be set for the interim roll out since it is unlikely a "completed" installation will be in place where one has churned from another Supplier e.g. no access to incumbents WAN etc, depending on what interim arrangements are put in place.

228 - Q7 Do you think that there is a need for interim targets and, if so, at what frequency should they be set?

Given that firm start and end dates to the rollout will be published, Suppliers are already incentivised to achieve those targets at least cost. Adding further constraints will only complicate the delivery of the rollout and add cost to the detriment of GB PLC.

Therefore, EDF Energy does not believe that interim targets should be set. Suppliers should provide evidence of rollout plans and report against them. If targets are set, they should be negotiated and not imposed. If targets are set, then they should be at most every two years providing flexibility to minimise end costs to the consumer, though reporting could be more frequent.

- Any targets set should take account of ramp-up profile and where a target is exceeded in a period then the subsequent target should take account of the total i.e. targets are cumulative

- The realities of customer churn would need to be taken into account within the targets, or how they are applied so that targets drive installation not acquisition.

228 - Q8 Do you have any views on the form these targets should take and whether they should apply to all Suppliers?

Any targets imposed should apply to all Suppliers otherwise they could be construed as being discriminatory to other parties. If targets are set then they must take account of:

- some meters are technically more difficult than others,
- customer churn,
- availability of assets / installation resource,
- any re-visits as a result of interim Smart Metering deployment, Business as Usual activities etc.
- volumes of 'hard to reach'

228 - Q9 What rate of installation of Smart Meters is achievable and what implications would this have?

We are currently in discussions with Ofgem on this. If the rate of installation is increased then it will ultimately lead to increased costs which will be borne by the consumer, if the Supplier is not given sufficient flexibility to deliver their own business case.

228 - Q10 Do you have any evidence to show that there are benefits or challenges in prioritising particular consumer groups or meter types?

Two particular areas of challenge we would like to highlight are:

- Installing Smart Meters in blocks of flats. No technical solution yet exists for connectivity between the meter and IHD where the meter is remote from the flat itself.
- Installing PAYG Smart Meters. The technology here is immature and the process of connecting the meter and leaving a working solution with credit on the meter will be more complex than installing a credit meter

We believe that prioritisation of particular consumer groups may increase costs and will lead to a sub-optimal rollout and risk completion of the rollout within required targets, if Suppliers are not given the flexibility to rollout in the most cost effective manner.

- We agree with 228 -2.4 however development timing of HAN/WAN and PP requirements will be crucial
- Geographic rollout of DCC may disadvantage some Suppliers with low customer base in area

- Any obligations should be made through an open process in order to debate and discuss requirements.

228 - Q11 Do you agree with our proposed approach to requiring Suppliers to report on progress with the Smart Meter rollout? What information should Suppliers be obliged to report and how frequently?

We agree that there is a need for the industry to monitor and report on the progress of Smart Meter Installations. We believe that suppliers should report on the number of Smart Meters installed, independent of churn every two years retrospectively. Anything greater than this would:

- Add additional IT costs in supporting requirements
- Distract resources from core requirements
- Business will require management reporting regardless of obligations, therefore Suppliers should report against their Ofgem approved rollout plan.
- Developing complex reports will distract key resources from enduring solution

- Once the DCC is established, it could report on the Smart Metering installed and operational The DCC will know all of all the domestic Smart Meters and therefore can report in a neutral way for all and cost effectively.

228 - Q12 Do you agree that there is already adequate protection in place dealing with onsite security or are there specific aspects that are not adequately addressed?

The protections that are already in place have been developed over some time are considered to be suitable for onsite security so should generally be adequate, with acknowledgement of the following.

- The Health and Safety Executive (HSE) have stressed the importance of ensuring that Smart Meters are installed safely and competently. In terms of HS&E EDF Energy is fully committed to achieving a Smart Metering rollout with zero harm. We need to ensure that the new technological aspects and any new Smart Metering related techniques are embodied into existing processes and working practices. There is a need to:
    - Identify training requirements, particularly with respect to Health and Safety requirements
    - Meter Operators must check for criminal background before employment of metering staff
    - Identify new hazards
    - Identify Product liability implications

- As to the environment there is some concern that the OFGEM prospectus makes no reference to WEEE or the Battery and Waste Accumulator Regulations. Clarity is required as to whether Suppliers will have obligations with respect to these regulations arising from IHD requirements.

228 - Q13 Do you agree with our proposal to require Suppliers to develop a code of practice around the installation process? Are there any other aspects that should be included in this code of practice?

EDF Energy supports the proposal to require Suppliers to develop a code of practice around the installation process. We would like to see some rationalization of existing codes such as MOCOPA and MAMCOP into the new smart code.

- There is a general agreement that Suppliers, Meter Operators and DNOs need to cooperate. Indeed EDF Energy is party to these discussions at MOCOPA/ENA/MAMCoP. However there is no mention of additional funding/ resources for DNOs who will be tasked with resolving network termination equipment issues at possibly 4 to 5 times the current rate, which may prevent the completion of the Smart Meter installation.

- There needs to be a consistent approach from all Suppliers as to the treatment of some issues e.g. damaged meter cupboards deemed to be the customer's responsibility. If customers are charged for such repairs this could impact the public's acceptance of Smart Meters.

- Some high level aspects that will need to be considered and included are:

    - Include HSE comment on safe installations?
    - Need to ensure that meter is installed at correct address and comms are correctly routed
    - Need to provide consistent information to all customers.
    - All work must be carried out to a consistent high standard and customer's property must be treated with respect
    - Industry should agree how customers with large bills / debt due to previous estimated bills are dealt with
    - How the increase in Revenue Protection Service activities towards the end of the rollout is dealt with.
    - Police checks on all new industry MOP staff
    - Work with National Skills Academy on recruitment and skills for Smart Meters

- We support the ERA view that the code should cover the following:

- **Pre-installation activities**

    - High level explanation of why Smart Meters are being installed and when;
    - Explanation of policy surrounding switching between PAYG and credit and circumstances in which meters can be remotely disconnected/reconnected;

- Selection, training and accreditation of installation engineers –engineers to be fit and proper persons, and references to levels of competency of engineers including training and expected qualifications;
- Details of how installation appointments will be made, and the circumstances in which customers can make alternative arrangements – for completeness, it might be appropriate to include details of what will be explained as part of the appointment making process;
- What the visit will entail and what, if anything, the customer might need to do to prepare for the visit (i.e. empty cupboards, make sure it's ok for supply to be off etc)
- What customers should do if they don't want a Smart Meter installed, and reasons why customers can choose not to have a Smart Meter installed;
- Arrangements that are in place/help that is available for vulnerable customers, customers of pensionable age etc. ; and
- What advice and information packs might be provided to customers in advance.

➢ **During installation activities**

- Installers will carry identity cards and show them to customers when they visit to install Smart Meters;
- Reassurance that installation engineers will leave the property how they found it (e.g. wipe feet, won't dirty carpets);
- Engineers will explain the equipment (i.e. how the IHD works, how to pair devices in the home – what can/can't be done etc.);
- For prepayment/PAYG customers - how prepayment/PAYG works and how it is different with a Smart Meter, how customers can top-up, and what emergency credit facilities are available;
- Explain how customers can get help if things go wrong, and who to contact if they need further assistance with their Smart Metering equipment;
- What will happen if the installation cannot be carried out due to safety/non-standard installations; and
- What level of energy efficiency advice is appropriate?

➢ **Post-installation Activities**

- Explain details around use of customer data to give assurances that data will only be used for Smart Metering purposes;
- Reassurance that customers are able to switch Supplier once their Smart Meters have been fitted;
- When Suppliers might need to visit their property after the Smart Meters have been installed i.e. safety visits/maintenance/upgrades etc;

- What customers will need to do if they move home – i.e. the arrangements for closing/opening reads, that the IHD should be left behind or taken to new home (policy decisions on this might be included within the prospectus) etc; and
- What customers should do if there is a problem with the Smart Metering equipment?

➢ **General**

- The circumstances in which customers might be switched from credit to prepayment/PAYG and vice versa - e.g. through customer choice or as a debt prevention measure;
- The circumstances in which a customer's supply might be de-energised – e.g. if a property is vacant and there is no customer taking responsibility for the supply, following the activation of a 'tamper alert' or as a debt prevention measure; and
- If the supply has been de-energised, what the consumer/Supplier will need to do to get the supply re-energised (including ensuring that it is safe for the supply to be re-energised).

➢ If not resolved correctly any issues could lead to:-

- A delayed Smart Meter rollout
- Bring about customer resistance
- Lead to potential H&S issues.

Appendix 1 Comments on Design Catalogue

High Level Functionality	EDF Energy Response	ELEC	GAS
Remote provision of accurate reads/information for defined time periods delivery of information to customers, Supplier and other designated market organisation		Y	Y
Two way communications to the meter system; communications between the meter and energy Supplier or other designated market organisation; upload and download data through a link to the wide area network; transfer data at defined periods; remote configuration and diagnostics, software and firmware changes	Concern over requirement for accurate billing data on IHD, how often will data need to be transmitted over the HAN Volume of HAN connections within the premises could be a restraining factor. May need multiple or upgrade functionality. The two way data requirement related to electric vehicles and micro-generation needs to be considered	Y	Y
Home area network based on open standards and protocols; provide "real time" information to an in-home display enable other devices to link to the meter system	Should say near real time; 5 seconds electric, 15 minutes gas. i.e. Near real time There is a fundamental question about the nature of HAN support. Default assumption seems to be that the utilities' HAN must incorporate all consumer devices and appliances and have some form of responsibility for them. Alternatives are: (1) The utility HAN allows appliances to join, but only pushes data to most of them, in a sort of broadcast or subscription manner. It does not need to care about what these appliances are, or control them in any way. It just provides information for them to act on if they wish. (2) The utility HAN is distinct from the consumer HAN. The two are bridged, and the utility HAN only offers simple data to the other - meaning it sends data out to the consumer HAN, on a push or pull basis, but does not receive data back in from it. The design group needs to look at these concepts closely Near real time not possible for gas due to battery constraints HAN data traffic analysis is required There is concern over up to date billing data requirements.	Y	N

High Level Functionality	EDF Energy Response	ELEC	GAS
	There are also concerns related to the efficacy of pairing devices with the HAN. General radio noise level particularly in areas of high density housing could be an issue for wireless HAN technology.		
Support for a range of time of use tariffs; multiple registers within the meter for billing purposes	There is a need to consider future possible tariff configurations and whether it should be the meter's job to manage them. Consideration should also be given to the concept of centralised functionality versus functionality built into individual meters/systems. Centralised features offer a cheap and easily updateable method of providing for system evolution. It needs to be recognised however that some functions will need to be incorporated into the meter/system to cater for WAN failure events.	Y	Y
Load management capability to deliver demand side management; ability to remotely control electricity load for more sophisticated control of devices in the home	Both for smart grid and super tariff requirements EDF Energy also believes that this requirement should also include boiler control? Such functionality needs to be low cost because of stranding risk. Further to comment regarding centralised functionality above, it is felt that such an approach lends itself to Network requirements. There is a need to assess to what extent this is an individual device/appliance/car control requirement versus a signal broadcasting requirement, which allows the items to decide for themselves (response) i.e. how much intelligence is vested in the metering system.	Y	Y
Remote disablement and enablement of supply that will support remote switching between credit and pre-pay	EDF Energy accepts the need for the ability to switch off but the customer must take a deliberate action to switch on.	Y	Y

High Level Functionality	EDF Energy Response	ELEC	GAS
Exported electricity measurement measure net	The system must recognise need for separate import/export data transaction with WAN to accommodate situations where the import Supplier and export Supplier are different entities. There is a question as to whether net export is really needed? Clearly distinct import and export is certainly required but why is net required? If import and export values are provided then some back office function should be able to provide this function. Is there a use case or calculation anticipated?	Y	Y
Additional Concerns	Should DUOS billing in terms of reactive energy be considered? The introduction of micro-generation will entail the need to consider new tampering possibilities and hence new revenue protection measures will probably be required.		
Capacity to communicate with a measurement device within a micro-generator; receive, store, communicate total generation for billing	Measurement device = meter. Need to send details over the WAN. Need to consider sub metering associated with micro generation, electric vehicles and other specialised loads (heat pumps etc.) Major architectural implications must be addressed by the design group. Most architectures use the electricity meter as a cache for other meters but that becomes an issue if there are lots of meters with highly granular data. Should this be a pass through architecture or a store and forward concept? A separate communications hub is more likely to support this concept by default, unless explicitly considered by the design group	Y	Y

Diagram of Meter System	EDF Energy Response
Comments on View of Meter System	It is assumed that water and heat metering which comply with the necessary HAN standards can be added to this network. Electric Vehicles - For completeness the above diagram should also depict metering related to electric vehicle provision. There is also a need to consider the exact configuration of electric vehicle metering. How will such metering link into the Smart Metering system of the future? Options are separate meters or additional elements within the tariff meter. A view needs to be formed now if the industry solution is to be truly future proofed. There is also the future prospect that EV charging points can be supplied by alternative Suppliers to main energy Supplier. Clearly the HAN needs to be open enough to cope with this future need. From a procurement perspective however it should be noted that EDF Energy would prefer to deploy meters that don't cater for electric vehicles in the early years. This is on the basis that it is felt that the EV requirement will emerge slowly and hence any money spent on the advanced technology associated with this need in the early years will be wasted.
1.10. Although the boxes in the figure are shown separately, it should be noted that varying levels of integration will be possible. The "Auxiliary Switches" box represents specified circuits within the home such as electric storage heating or immersion heaters found in some Economy 7 installations.	With regard to HAN switching signals there is clearly a case for developing 100A contactors that can be actuated by a HAN signal. However in the meantime EDFE believes that there is a case for preserving the practices of:- • Fitting meters that have 2A contacts for the purpose of off peak load switching. This is to meet existing requirements related to two-rate tariffs wherein heating load is currently switched by an external contactor. Contactors switched by an internal meter switch could also be deployed as a means of replacing radio tele-switches and or time-switches. • Fitting meters with separate off peak 80/100A contactors (akin to the current 5 port meter). This would be a variant to the standard Smart Meter design as described in SRSM. Consideration needs to be given to how quickly a broadcast signal can reach a large population of Smart Meters. The

Diagram of Meter System	EDF Energy Response
	current suggested timing of 100,000 per hour is felt to be too slow for smart grid control. Ideally the Smart Metering system MUST provide a service capable of replicating current RTS functionality. The response issue can possibly be addressed by techniques that group devices and establish a random spread. It is important to note that GPRS for example does not support any form of broadcast at all and so this is considered to be a serious limitation for GPRS and some other technologies.
1.11. It is recognised that possible exceptions to this configuration are blocks of flats or other situations where the metering system components are not co-located within a short distance of each other.	It might be the case that environments that feature special requirements like blocks of flats or other situations where the metering system components are not co-located within a short distance of each other might not be suitable for early rollout.
1.16 Our proposal is that the WAN hardware should be exchangeable without physically exchanging the meter. For example, it could be modular within the meter housing or exist as a separate box outside of the meter housing. In this latter case it will communicate via the HAN to the Smart Meter and require its own consumer independent power supply. Communication of meter readings to the WAN hardware is possible via a plug and socket interface (if co-located in the meter) or wirelessly via the HAN. The benefit of having the WAN either modular or separate from the meter is that it can be updated or changed as communication technology develops. I had a chat with manufactures about modular comms and two [points where discussed. Firstly could we build industry standard interfaces, so that a	The provision of a separate box will require utility grade wiring/protection and need to be installed by an electrically competent meter fitter. The communications module should be in the electricity meter due to tamper concerns. If the communication device is external to the meter then there will be additional security requirements and the possible need to include additional tamper detection systems within unit. A separate box will probably mean a fundamental change to metering architecture that no standard supports today and no other market has yet shown a need for. EDF Energy would clearly prefer a modular approach, wherein the WAN module plugs into the meter. Furthermore it is important to ensure that the meter manufacturers recognise the need to ensure that an industry standard module concept can be developed. To this end all manufacturers must provide an aperture into which a standard communications module can be plugged into and sealed into place.

Diagram of Meter System	EDF Energy Response
Supply Co is not tied to a particular meter Manufacturer or need to hold stock fro all eventualities. The second is around the interface itself as this may potentially enable us to an extent future proof. The discussion was around building in the ability to increase capability by using the comms module.	
In terms of modularity, our current position is that there is no requirement for the HAN hardware to be exchangeable without exchanging the meter	This statement implies that HAN hardware must be present for life of meter system. It also implies that the HAN hardware associated with the hub is separate from WAN hardware. The statement in suggesting meter replacement appears to relate solely to HAN hardware within the meter(s).
3.15. The HAN functional requirements describe the expected functionality of the links between the devices that are connected to the HAN, some of which are battery powered (e.g. the gas meter), are located at distance and must operate for 15 years. There is a functional requirement for the HAN solution to be backwards compatible to ensure that technology upgrades do not compromise the operation of devices connected to the original HAN. We also recognise that there is some degree of future proofing required given the emerging requirements of other "smart" applications. Some existing solutions have the ability to add new device classes. In terms of modularity, our current position is that there is no requirement for the HAN hardware to be exchangeable without exchanging the meter, but we welcome views in this area.	There is an argument that the communications module should combine WAN and HAN in one, box. If this is divorced from the meter then there will be better flexibility and better segregation etc. but it means more cost because the module will then need to have more CPU and memory and more complex functionality, which the meter already includes to some extent. There will probably be an increased power drain also. Clearly there will be a need to consider the security implications associated with modularity. Whilst it is accepted that module chambers can be sealed and that tell-tale switches can signal interference access to a HAN module could possibly leave the system exposed to a possible hack attack. Clearly the design group must decide this. Based on the pros and cons described above the matter is unlikely to be a differentiator.

Specific Functionalities		EDF Energy Response (if blank we accept)
Installation and Maintenance Requirements		
IM.1	The Smart Metering system components shall be installable in current existing meter locations in consumer premises.	
IM.2	The Smart Metering system shall enable remote firmware upgrades.	
IM.3	The Smart Metering system shall support in situ exchange of WAN communication technology (without removal of meter).	
IM.4	The Smart Metering system shall resume normal operation without technician intervention after a failure in the metering system power supply.	
IM.5	The Smart Metering system components shall be uniquely identifiable electronically where applicable.	All components must also be labelled. All components must be traceable even following a COS due to potential manufacturer recalls. This includes IHDs which may have been transferred. Suggest wording change to "**All** Smart Metering system components shall be…"
IM.6	The Smart Metering system components shall be uniquely identifiable mechanically where applicable.	Suggest wording change to "**All** Smart Metering system components shall be…"
IM.7	The Smart Metering system components' batteries shall only be exchangeable by authorised personnel.	
IM.8	The Smart Metering system components shall support local access and configurability by authorised personnel.	It is felt that Operative could connect via the HAN and the industry needs to consider what option presents the minimal the possibility of a hack attack. Flag style ports could be susceptible to tampering but engineer access via HAN means that the HAN is inherently open to attack although it costs less, and is very logical. Access via a FLAG or other port means an

Specific Functionalities		EDF Energy Response (if blank we accept)
		extra cost, and an extra point of security complexity and weakness. The HAN can be accessed without physical access to meter - good for maintenance, but reduced physical security. Plus through the wireless media it might be possible to hack into the metering system of another property. Engineering access to the meter via the WAN, which presents no increase in security issues (since it is a mandatory requirement anyway) could also be considered but there may be response and signal coverage issues. Narrative should suggest methodology i.e. is this via a HHU connected via the HAN or a FLAG style port? Is either method acceptable?
IM.9	The Smart Metering system shall allow in situ maintenance for non safety critical maintenance. Battery/ Module change etc.	It should be possible for relatively unskilled staff to replace any battery or communications module. Narrative should suggest that operation is carried out by unskilled staff.
IM.10	The Smart Metering system shall support remote identification of devices attached to the HAN.	Help desk support etc. requires customer consent does this present a privacy concern. Should Suppliers be able to see what a customer has connected? Conversely smart grids might need to know in order to assess load shedding capacity. It is suggested that for the purposes of demand side management statistical analysis should be used since this overcomes the privacy issues. White goods manufacturers in making HAN switchable products will be required to comply with HAN standards. However it has to be recognised that the customer will still have a choice as to what they purchase and appliance price or other preference might dictate that they don't opt for a HAN switchable device. Presumably this means **all** devices, including customer's appliances
IM.11	The Smart Metering system shall self configure on installation without the need for manual data	Pre-configuration is not considered to be a viable option as it entails the requirement to pre-pair devices and maintain stock in the

Specific Functionalities		EDF Energy Response (if blank we accept)
	entry to the system components.	form of sets. Pairing must always be an onsite process, even if it needs a HHU uplink via the back office to actually take effect. This is because swaps will be necessary in practice, both during installation and during later maintenance The HHU could update through HAN but consideration needs to be given as to whether this introduces a weak point for hackers. In any event the meter configuration set up needs to be established before the MO leaves site enabling the customer to be instructed as to usage.
IM.12	The Smart Metering system shall be installed and maintained in a manner that protects public safety.	Meter terminal arrangements are being discussed at IMAG.
Operational Requirements		
OP.1	The Smart Metering system components necessary for remote reading in the consumer premise shall operate independently of any consumer interaction (including provision of energy supply and communications).	
OP.2	The Smart Metering system shall use UTC (GMT) for all timing functions/date & timestamps.	It is assumed that UTC will be used for all tariff timing functionality but that the IHD will display UTC in Winter or UTC + in British Summertime?
OP.3	The Smart Meter shall support "last gasp" communications to notify loss of energy supply.	It is assumed that the meter will always back-up its metrological registers and that this will take precedence over last gasp requirements. The requirement will clearly need to cater for the use of auto-reclosing switchgear on the network. Last gasp messaging if widely deployed present the possibility of a large scale communication system overload possibility! This functionality benefits the Network

Specific Functionalities		EDF Energy Response (if blank we accept)
		Operators, why should Suppliers pay for this and is it a definite requirement?
OP.4	The Smart Metering system components in the consumer premises shall consume less than 2.6W average combined.	Does this include IHD consumption? What is included within the 2.6 watt allowance, HAN/WAN/IHD Metrology? This might be challenging and needs testing. Need to check MID requirement in terms of both active and reactive energy allowance. Any additions relating to smart appliances should not be included within this requirement.
OP.5	The Smart Metering system time shall be accurate to within 20 seconds of UTC.	This requirement is a little unclear, is the allowance assumed to be with the support of regular updates from the WAN or does it also apply in the absence of the WAN and if so what is the qualifying drift allowance in seconds per year? Need to specify the operating conditions.
OP.6	The Smart Metering system shall support a default mode of operation (reset to minimum functionality).	In the event of a Supplier switch/fault condition there should be a default mode of operation (as some Suppliers may wish to exceed minimum requirements).
OP.7	The Smart Metering system shall support firmware upgrades while maintaining normal metrology functionality.	MID is specific on this point hence clearly software update should not extend to metrology firmware.
OP.8	The Smart Metering system shall enable robust and reliable local (in consumer premise) user interaction to re-enable energy supply in the event of activation of the enablement mechanism. i.e. Customer must take a deliberate action to re-enable supply..	Design needs to consider the tower block situation and remote enablement via IHD. Should IHDs always be mandated in such circumstances? Careful consideration needs to be given to the provision of mains powered IHD's but with battery back up. Such an IHD should power down immediately upon loss of mains and have a button press re-activation facility allowing the customer to restore their supply once credit or authority to switch on has been received. Such a feature will ensure that the

Specific Functionalities		EDF Energy Response (if blank we accept)
		batteries remain fit for purpose for a considerable period of time.
Display and Storage Requirements		
DS.1	The Smart Metering system shall display any billing information using £ and pence (but be Euro compatible).	
DS.2	The Smart Metering system shall be capable of storing 12 months of half hourly consumption data.	There appears to be a lack of clarity regarding this requirement. Does this apply to all channels i.e. 12 months of HH data per register type or is this 12 month's worth of data related to all HH data requirements. If the latter then this could mean less than a year based the number of channels e.g. if two channels are required then data on each will only be available for 6 months. If a complete year's viewing is required then the system needs to be based on a rolling 13 month period. Where is the data to be stored, clearly not the IHD as this is not a compulsory requirement?
DS.3	The Smart Metering system shall support display of mode of operation (credit or Prepayment).	Should system be able to advise as to VAT, block tariff rates IGT charges, and DUOS charges or should it simply advise as to the current price that the customer will pay?
DS.4	The Smart Metering system shall display energy supply status (enabled or disabled).	There are possibly 3 states to consider • On, • Off and disabled, i.e. can't be switched on by customer • Off and enabled i.e. off but ready to be switched on by customer action What exactly is the specification calling for? Should the system also specify the reason i.e. idle service, credit required etc? A further question related to this issue is should the meter display be operable during a power cut and if so should the lack of mains be indicated?
DS.5	The Smart Metering system shall	Clarity required is this on meter, IHD or both?

Specific Functionalities		EDF Energy Response (if blank we accept)
	display local time unambiguously (where it is displayed). Not to be confused with UTC.	Will tariffs be configured to local time in future? Suggest wording change from "where it is displayed" to "wherever it is displayed".
DS.6	The Smart Metering system shall support erasure of any consumption data stored locally.	Currently there is a requirement for an overall total kWh register that cannot be reset! What exactly is it that is looking to be achieved here? There are some data protection concerns here:- • Who owns the data? • On COS/COT is new/incoming Supplier entitled to any historical data? Could the customer argue that he/she is entitled to access data accumulated prior to a switch of Supplier? If so how is the new Supplier prevented from seeing historic data? Will the outgoing customer on COT be allowed to request that data relating to usage remains available to new incoming customer?
DS.7	The Smart Metering system shall support the provision of information in a manner that takes account of the requirements of persons with disabilities.	Should this only be provided on the basis of need, why add a cost burden to every system?
DS.8	The Smart Metering system shall support English and Welsh language for any human communication.	EDF Energy doesn't disagree that national languages need to be recognised but is this necessary everywhere? Could the policy not just be applied on a regional basis? Is this a legal requirement?
DS.9	The Smart Metering system shall unambiguously identify all of its registers.	The register naming convention must be DTN compliant.
Interoperability Requirements		
IN.1	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.	

Specific Functionalities		EDF Energy Response (if blank we accept)
IN.2	The Smart Metering system shall allow for change of Supplier remotely without premise visit.	
IN.3	The Smart Metering system shall support non proprietary data formats for information exchange with consumers	
Prepayment & Credit Requirements		
PC.1	The Smart Metering system shall be remotely switchable between prepayment and credit mode of operation.	
PC.2	The Smart Metering system shall support "tokenless" prepayment mode of operation via remote top ups.	
PC.3	The Smart Metering system operating in prepayment mode shall support remote configuration of emergency/friendly credit.	
PC.4	The Smart Metering system operating in prepayment mode shall support remote configuration of debt recovery.	
PC.5	The Smart Metering system operating in prepayment mode shall be capable of maintaining supply to premise independent of WAN communications.	Furthermore in a situation of prolonged WAN absence EDF Energy would expect the meter to continue acting as an independent PP meter utilising last known settings and affording the customer some means of manual top-up? Careful consideration however needs to be given to this situation as dishonest customers could exploit the situation by disabling the WAN. For example if a pending increase in price was expected the customer could disable the WAN to block the price change signal and continue to enjoy the old price. A policy decision is probably needed to determine what action Suppliers should take if they suspect foul play. Suggest wording change to "The Smart Metering system operating in prepayment mode shall be capable of continually

Specific Functionalities		EDF Energy Response (if blank we accept)
		maintaining the supply and prepayment functionality to the premise using last known settings independent of WAN communications."
PC.6	The Smart Meter operating in prepayment mode shall store top up, debt recovery, and emergency credit history for the last 3 months.	Why is it necessary to store emergency credit for 3 months? Some Suppliers do not offer emergency credit.
PC.7	The Smart Metering system shall store data used for billing and settlement purposes for at least 3 months in non volatile memory.	
PC.8	The Smart Metering system shall support real time remotely configurable tariff structures.	Should also support standing charges
PC.9	The electricity Smart Meter shall support at least 48 configurable time of use periods for its consumption registers.	What is the rationale for this - is it a calculated value?
PC.10	The Smart Metering system operating in prepayment mode shall support local credit top up.	
PC.11	The Smart Meter system shall support prompt and timely register of remote top ups.	Narrative suggests within 30 minutes but if a customer was off supply they'd probably expect <5 minutes. Accepted that this might be a limitation with gas but clearly electricity should be much better.
Electricity Specific Requirements		
ES.1	The Smart Metering system shall support remote connect and disconnect of supply into the consumer premise.	Should say remote connect (enablement only). The customer needs to take a deliberate action to restore supply. Consideration could be given to automatic disconnection if a high current equal to or greater than a preset value is detected. This will provide a sensible means of overload protection. Clearly the switch rating will need to take this into account. The switch should not however be considered as a protective device in respect of short circuits.
ES.2	The Smart Metering system shall support at least one total register	

Specific Functionalities		EDF Energy Response (if blank we accept)
	for import kWh	
ES.3	The Smart Metering system shall support at least one total register for export kWh.	
ES.4	The Smart Metering system shall support import kVarh measurement.	
ES.5	The Smart Metering system shall support export kVAr measurement.	
ES.6	The Smart Metering system shall support import kW measurement.	
ES.7	The Smart Metering system shall support export kW measurement.	
ES.8	The Smart Metering system shall support import kVAr measurement.	
ES.9	The Smart Metering system shall support export kVAr measurement.	
ES.10	The Smart Metering system shall support measurement of other power quality data including: voltage, frequency and sag and swell information, harmonic distortion.	The requirement to provide data related to harmonics is considered to be particularly expensive, who will fund this? This should only be included if CBA justifies it.
ES.11	The Smart Metering system shall support capture of consumption and demand data at 5 second intervals.	If this requirement is only for instantaneous data for transmission to the HAN, then there is no issue. If however it means data for storage and transmission to the WAN, then that raises a whole new level of specification and implicit additional costs. Also, this could be restrictive to innovation, as appliance level software developments require immediate capture, instead of 5 second intervals. Hence this requirement will hinder innovation in appliance level monitoring
ES.12	The Smart Metering system shall allow the supply switch to be configurable to be open or closed for a range of non safety critical events.	
ES.13	The Smart Metering system shall support auxiliary switching and load control commands from remote third parties.	Need to consider who are the third parties? ERA expressed concern about randomisation requirements. Suggest wording change to "The Smart

Specific Functionalities		EDF Energy Response (if blank we accept)
		Metering system shall support auxiliary switching and load control commands from remote third parties. In the event of bulk switching commands to multiple MPANs a mechanism must exist to prevent Network surges.
Gas Specific Requirements		
GS.1	The Smart Metering system shall support local storage of calibration data (calorific value, conversion factors, etc.).	This needs specifying in terms how frequently such data needs to be updated, what historical records have to be retained. Meters traditionally record in cubic metres hence if the IHD is required to display in kWh this will inevitably generate customer enquiries!
GS.2	The Smart Metering system shall support at least one total register for gas consumption.	Does this need to consider pre-loaded calorific value and conversion factors or is this simply a volume register? If CV and other conversion factors need to be considered, then it is assumed the values will change and if so consideration needs to be given to how often and what will be assumed in terms auditory requirements. Given the complexity that this implies, it is felt that cumulative values can only realistically be stored in terms of volume measurement.
GS.3	The Smart Metering system shall support at least 48 wake up events per 24 hour period.	This requirement does not accord with the 15 minute IHD data transmission requirements? Greater clarity is required.
GS.4	The Smart Metering system shall support capture of gas consumption data at 5 second intervals.	Text does not suggest transmit. Why what is the point of this level of granularity if gas meter can only be interrogated once every 15/30 minutes?
GS.5	The Smart Metering system shall support a valve for enablement and disablement of gas supply.	
GS.6	The Smart Metering system shall continue normal operation in the event of a gas supply interruption.	The design needs to consider possible implications for the architecture that this suggests. One question that arises is can the gas meter in pre-payment mode be topped up via the IHD when the electricity meter is switched off? Clearly this has implications for how the HAN is powered.
GS.7	The Smart Metering system valve	Assumes that valve does not attempt to

Specific Functionalities		EDF Energy Response (if blank we accept)
	shall be configurable to be open or closed in the event of battery failure.	operate if a critical battery voltage threshold has been reached.
GS.8	The Smart Metering system shall support 20 valve operations per year within the 15 year battery life requirement.	Experience indicates that a customer living on the edge of credit limit will probably require more valve operations.
GS.9	The Smart Metering system shall support measurement of peak demand for gas supply.	Gas MD Smart Grid Requirements are unknown and we need to understand more in terms of what measurement, storage and communication / alert requirements there would be.
Diagnostics		
DI.1	The Smart Metering system shall support logging of the following diagnostic, fault and tamper information, including date stamping of the information:- • Meter faults, • Supply faults, • Communications faults, Loss of HAN, Loss of WAN etc. • Cover removal, all meter covers, terminal, • Clock resets and faults, • Improper running of the registers, • Unauthorised logical access,	These need specification Loss of supply only or voltage/harmonics etc out of range? No WAN signal strength indication should be visible to the customer since anyone unscrupulous would be able to see if actions they take reduce signal strength were successful. Presumably this will apply to all meter covers, terminal covers, battery compartments, communications modules and gas meters. This requirement needs to be specified. Plus it is assumed authorised logical access, the system won't know the difference between bona fide access by an authorised party and a good hacker! In such

Specific Functionalities		EDF Energy Response (if blank we accept)
		circumstances unusual data traffic events might be the only clue.
	• Energy flow exceeding agreed extreme levels,	
	• Interruption to neutral supply of meter (electricity only),	Loss of neutral will de-energise meter. This requirement needs further specification as this could imply live element current sensing.
	• Bridging of internal switches (electricity only),	EDF Energy feel that micro-processor resets should be counted and be available for interrogation since this could be indicative of certain types of tampering.
	• Remote enablement, disablement events, etc.	Close proximity of strong magnetic fields to measurement elements should also be considered.
DI.2	The Smart Metering system shall support remote configuration of logs, alarms and thresholds.	Should an alarm be sent in relation to all logged events? It is suggested that the standard meter default should be set to import only with a reverse energy flag. This will highlight tampers and unregistered micro-generation sets.
DI.3	The Smart Metering system shall support configuration of alarms associated with usage thresholds.	Further clarity is needed around this requirement. Does it relate to IHD alarms given to the customer or overload thresholds relayed to the Supplier?
DI.4	The Smart Metering system shall store its configuration data in non volatile memory.	
DI.5	The Smart Metering system components shall be identifiable within any diagnostic log information.	Is the IHD out of Scope of this requirement?
DI.6	The Smart Meter system shall communicate battery status for metrology related functionality.	
Security and Privacy Requirements		
SP.1	The Smart Metering system shall	

Specific Functionalities		EDF Energy Response (if blank we accept)
	support strong mechanisms for authentication, authorisation and access control.	
SP.2	The Smart Metering system shall support secure data communication to ensure the confidentiality, integrity and availability of the data and commands.	
SP.3	The Smart Metering system shall be protected from physical tampering or interference, e.g. security seals, tamper switches etc.	We need a change of wording to indicate exactly what measures will be mandatory.
SP.4	The Smart Metering system components shall be inaccessible to unauthorised parties.	
SP.5	The Smart Metering system shall ensure that keys and certificates used for access control and secure communications are securely stored.	
SP.6	The Smart Metering system encryption keys and certificates shall be remotely manageable in a secure manner.	
SP.7	The Smart Metering system shall be appropriately robust to prevent local or remote electronic attack or unauthorised use.	
SP.8	The Smart Metering system shall ensure that firmware upgrade is secure.	
SP.9	The communication interfaces of the Smart Meter shall be secure and robust.	
SP.10	The security Smart Metering system shall be demonstrated to be fit for purpose through rigorous independent testing.	
SP.11	The Smart Metering system functionality that can affect the supply of energy (e.g. remote disconnect or demand side management) shall be	

Specific Functionalities		EDF Energy Response (if blank we accept)
	appropriately protected from unauthorised use by access control measures.	
SP.12	The Smart Metering system shall ensure that only authorised devices may connect to the Smart Meter.	
SP.13	The Smart Metering system communications shall be designed and implemented to restrict the numbers of Smart Meters that are visible to each other to prevent one meter being able to attack other meters.	
SP.14	The Smart Metering system shall incorporate security logging for physical tampering and electronic security events.	
SP.15	The Smart Metering system shall follow the principle of least privilege.	
SP.16	The Smart Metering system shall follow a secure development lifecycle for software.	
HAN Requirements		
HA.1	The HAN interface shall be based on open and non proprietary standards.	
HA.2	The HAN interface shall only support authorised devices (i.e. no unauthorised linking of devices).	There are 3 ways of looking at this (1) unauthorised party trying to link authorised (i.e. compliant) device (2) Authorised party trying to link a non compliant device. (3) Unauthorised party trying to link a non compliant device, although first two conditions capture this. Suggested wording change: "The HAN interface shall only support local or remote linking of HAN compliant devices by authorised parties."
HA.3	The HAN interface shall support real-time two way communication from mains powered nodes (5s delay/update).	What about requirement for battery powered nodes e.g. EV, microgen etc

Specific Functionalities		EDF Energy Response (if blank we accept)
HA.4	The HAN interface shall support network coordinator functionality for Smart Meter system components.	This is a specific requirement which may not be supported by all HAN solutions
HA.5	The HAN interface shall be independently certified and tested for interoperability.	We have a concern over certification of certain HANs, where many versions across the world. How will this be controlled, by standards or a notified body?
HA.6	The HAN interface shall support operation over the radio frequency physical layer.	
HA.7	The HAN interface shall support appliance control events minimum 100 events per 24 hour period, minimum response rate of 5s once signal sent from HAN interface).	This may not be sufficient for some SME consumers e.g. business that has multiple EVs etc
HA.8	Not used	
HA.9	The HAN interface shall support the use of repeaters, boosters, etc. to extend range.	HAN should support options for overcoming technical challenges for signal propagation. This should not specify solutions e.g. repeaters, boosters etc
HA.10	The HAN interface shall support acknowledgement of signals.	
HA.11	The HAN interface shall support 30 minute update (wake up) frequency from battery powered nodes.	
HA.12	The HAN interface shall be remotely upgradeable.	
HA.13	The HAN interface shall support gateway/bridging devices to access data made available on the HAN.	
HA.14	The HAN shall support a defined application profile for devices that connect to the HAN.	
HA.15	The HAN shall support alphanumeric messaging.	
HA.16	The HAN shall support the security and privacy requirements.	Suggested wording change "The HAN shall support the security and privacy requirements of all parties."
HA.17	The HAN shall be capable of	

Specific Functionalities		EDF Energy Response (if blank we accept)
	supporting other utility meters where the data requirements do not exceed those of gas and electricity Smart Meters.	
HA.18	The HAN shall be capable of being physically switched on and off by authorised personnel.	
HA.19	The HAN shall support addition of new devices classes.	
HA.20	The HAN shall be backwards compatible.	
HA.21	The HAN shall be used by all Smart Metering system components in a consumer premise.	
HA.22	The HAN shall not interfere with existing accredited premise HANs.	Is the word accredited required? Who accredits existing premise HANs and should it read adversely impact, rather than interfere?
WAN Requirements		
WA.1	The WAN interface shall be based on open and non proprietary standards.	
WA.2	The WAN interface shall support real-time interrogation of WAN enabled devices with response rate of 1 minute or better	This is not quick enough and should be measured in a few seconds (customer research)
WA.3	The WAN interface shall support acknowledge signals.	Suggested wording change "The WAN interface shall support acknowledgement signals."
WA.4	The WAN interface shall be independently certified and tested for interoperability	
WA.5	The WAN shall support the security and privacy requirements – set out in the earlier section of the Catalogue	
WA.6	The WAN shall be capable of being physically switched on and off by authorised personnel.	
WA.7	The WAN shall support simultaneous communication with a large number of meters within a short timescale	The stated broadcast times are significantly greater than current Radio Tele Switch (RTS) broadcasts for volumes. The smart world should be the same or better than RTS and should apply to E2E timings

Specific Functionalities		EDF Energy Response (if blank we accept)
IHD		**Requirements**
IH.1	The IHD shall support mains power operation.	There is a need to mandate an IHD solution for Prepayment customers that ensures power is retained for as long as possible following loss of mains, thus minimising the possibility that a customer is left off supply with no means of re-enablement. Any batteries used should be of a non-standard physical format so they cannot be used in another device (e.g. TV remote control). To conserve IHD energy, whenever it is operating in a non mains mode it should power down after x seconds (TBA) of no activity. There are 3 potential options for powering the IHD in a no supply situation: 1. HD mains fed, with rechargeable batteries, which are trickle charged. The IHD should also power down on loss of mains to minimal functionality, i.e. clock function only. There should be a re-activation button which the customer can press to re-activate the unit in the event they wish to upload credit and or re-enable their supply. 2. As above but with either long life non rechargeable batteries (lithium) 3. As per 1st option but using a high quality capacitor charged off the main Suggested wording change: "The IHD shall support mains and battery power operation."
IH.2	The IHD shall show the following information for gas and electricity: • Indicative real-time usage in kW; • Indicative real-time rate of consumption in pence per hour; • Accurate cumulative consumption in kWh and £ for current day / week / month / billing period;	**IH.2 Accurate Cumulative consumption…** We need to define 'accurate' and what this really means. We also need to be aware that if an IHD

Specific Functionalities		EDF Energy Response (if blank we accept)
		becomes faulty and a new IHD is installed, then historical data can only be retrieved from the meter, for which we need to ensure this requirement is part of the specification, but it may not reflect the same period of time stored on the previous IHD. Hence comparisons would not be possible until history within the new IHD has been built up. There are also a few scenarios where data stored on the IHD, may not suitable for comparison: - Change in Tenancy – the old consumer may object to his consumption being available for the new consumer - On Change of Supply would the old Supplier have any grounds to object to the new Supplier viewing that data?
	• 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;	**IH.2 Historical Date -** The provision of historical data, in order to provide meaningful comparison to consumers requires clarification. There are also a few scenarios where data stored on the IHD may not suitable for comparison: o Change in Tenancy – the old consumer may object to his consumption being available for the new consumer o On Change of Supply would the old Supplier have any grounds to object to the new Supplier viewing that data? We also need to be aware that if an IHD becomes faulty and a new IHD is installed, then historical data can only be retrieved from the meter, which is unlikely to reflect the same period of time stored on the previous IHD, hence comparisons would not be possible until history within the new IHD has been built up.
	• Accurate account balance information (amount in credit or debit) in real time for prepayment customers and on	**IH.2 Account Balance** - Providing account balance information on a monthly basis may be feasible, however the Prospectus goes on to say that Ofgem would expect Suppliers to provide this information at more frequent intervals, should the consumer request it. The

Specific Functionalities		EDF Energy Response (if blank we accept)
	at least a monthly basis for credit customers;	cost and complexity of carrying out more frequent billing processes to support this would make this requirement untenable. Also, the following factors also need to be considered: o Communication costs are not the main consideration in providing more frequent updates to the IHD for account balances. o More frequent updates could cause confusion to consumers, particularly where block tariffs are concerned and the higher unit rates are applied for the first block. o Also, discounts and other variable aspects on tariffs cannot be calculated until a full billing period has expired.
	• Current tariff (i.e. cost per unit in pence per kWh);	**IH.2 Current Tariff** - Clarity is required on what this actually means and what data is required to be displayed, between the following: o Do we only display the rates for the various component parts of the tariff, in a static format, or o Is this a requirement to show the current rate for the time of day the consumer views the IHD? If it is this, then this could problematic dependent on how the meter rates are set up i.e. UTC or BST compared to local time on the IHD.
	• Local time;	**IH.2 Local Time** – Similar to Current Tariff, in that we need to be careful we do not inadvertently introduce confusion to the consumer, whereby they are looking at the local time on the meter and actually see a current usage cost higher than their expectations, because the meter is running on UTC and the current time band rate on the meter is a high rate, or vice versa.
		IH.2 Non numeric display

Specific Functionalities		EDF Energy Response (if blank we accept)
	• Status of communication link • 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 displayed in a visual (non numerical) way which allows a consumer to easily distinguish between low and high current consumption. • Minimum real time update for electricity is 5 seconds, for gas it is 15 minutes.	• Our EDRP experience shows that ambient feedback is received well by consumers as an indicative measure of current usage. • However investigation should be undertaken to establish whether configurations could be included to allow for consumer specific usage and how this could be managed post installation for various reasons e.g. Change of Tenancy, change in the number of occupants, significant appliance change etc that could all effect the ambient settings. **IH.2 Real Time Update** - HAN requirement HA.11 states 'The HAN interface shall support 30 minute update (wake up) frequency from battery powered nodes. It is recognised that a 15 year battery life for a gas meter is not compatible with real-time communication, hence a relaxed requirement for battery powered nodes.' This is not compatible with IHD Requirement IH.2 which states 'Minimum real time update for electricity is 5 seconds, for gas it is 15 minutes.' Clarity over this anomaly would be appreciated.
IH.3	The average IHD power consumption shall be less than 0.6w.	This states the average IHD power consumption shall be less than 0.6w. We require clarity as to whether this will only apply to the base IHD that will be provided as part of the mandate. We can foresee a situation where a customer has signed up to a specific package and part of that package is the provision of an enhanced IHD that could draw more energy. This will of course be pointed out to the consumer as part of the package negotiation, but this average power requirement could interfere with the innovation of provision of information to consumers through displays.
General		The data made available to the HAN / IHD should be standardised to allow Suppliers to communicate to the IHD, installed by another Supplier. How the IHD manipulates and

Specific Functionalities		EDF Energy Response (if blank we accept)
		displays the data should be subject to the defined minimum Smart Metering functional requirements.

Appendix 2 Comments on Services

225 Ref.	Service	Service to be Delivered	Example Service Levels	Frequency of Transaction	Benefit Delivered	EDF Energy Comments
1.53	**Registration of Smart Meter**	Self-registration of Smart Metering system with the DCC after installation is complete.	On Demand: □ Registration acknowledgment shall be received from the DCC With in 2 hours for 90% of meters. □ Over a 24 hour period, 0.01% of the anticipated meter population shall be able to self register with the DCC.	On Demand: Registration of a meter will be required only on installation.	Customer switching and Avoided site visit (high-level list B).	
1.54	**Check Accuracy of Master Clock Data**	□ Check of the Smart Metering system master clock. □ Remote update of clock.	On Demand: □ 90% of remote checks of the Master Clocks' time to be completed within 2 hours. □ 99.9% of remote checks of the Master Clocks' time to be completed within 8 hours.	On Demand: Each meter's clock will be checked for accuracy on an annual basis.	Inbound enquiries and Customer services overhead (high-level list B).	
1.55	**Tamper Alarm Triggered**	□ Communication of a meter tamper alarm. □ Enablement, disablement of the tamper alarm.	On Demand: □ A meter tamper alarm shall be reported within 60 minutes of tamper detection. □ Capability for 0.5% of meters to submit a tamper alarm within a 24 hour period.	□On Demand: A tamper alarm will only happen in the event that a meter has been tampered with. Likely to be single events per meter per year.	□ Reduced theft (high-level list B).	
1.56	**Meter Fault Alarm**	□ Communication	On Demand: □ A meter tamper	On Demand: Meter fault	Inbound enquiries and	

225 Ref.	Service	Service to be Delivered	Example Service Levels	Frequency of Transaction	Benefit Delivered	EDF Energy Comments
	Triggered	of an alarm from the meter to the DCC to signify a malfunction of the meter. Remote enablement, disablement of the tamper alarm.	alarm shall be reported within 60 minutes of tamper detection. Capability for 0.5% of meters to submit a tamper alarm within a 24 hour period.	alarms will only be triggered if there is a fault with the meter. Likely to be single events per meter per year.	avoided site visit (high-level list B).	
1.57	**Firmware/Software Upgrade**	Update of firmware/software for the meter, WAN Modem, IHD, etc. NB these updates can be of significant size (100's kbytes)	On Demand: A firmware or software upgrade to all meters shall be completed within 60 minutes. 99.9% of all meters shall be upgraded within 14 days of completing the update.	On Demand: Firmware and software upgrades will happen in frequently. There may be instances where it is necessary to update many meters in a short space of time. Likely to be single events per meter per year.	Customer switching and avoided site visit (high-level list B).	
1.58	**Diagnostics**	Remote access of meter configuration data. Remote access of meter event logs. Remote access of battery status. Remote access of the operational status of the HAN.	On Demand: 90% of on demand requests for diagnostic data to be received by the DCC within 30 minutes.	On Demand: Likely to be single number of events per meter per year.	Inbound enquiries, Avoided site visits, Customer services (high level list B).	

225 Ref.	Service	Service to be Delivered	Example Service Levels	Frequency of Transaction	Benefit Delivered	EDF Energy Comments
		Communication of a warning that the memory capacity of the meter is about to be exceeded. Communication of a warning that battery capacity is low.				
1.59	**Test Meter Communication Line**	Test the operational status of the communications link between the Smart Metering system and the DCC.	On Demand: An acknowledgement of a successful test and associated parameters shall be received within 1 minute.	On Demand: Testing of the communication line shall only be required on installation and in the event of a fault retrieving information from the meter. Likely to be single events per meter per year.	Avoided site visits (high-level list B).	
1.60	**Service Life Notification**	Smart Metering infrastructure shall support the communication of a message to signify the meter is due to end its calibration life or service life.	On Demand: Messages signifying the end of calibration life or service life shall be received from 90% of meters within 12 hours.	On Demand: Less than single events per meter per year.	Inbound enquiries, Avoided site visits, Customer services (high-level list B).	Suggest this should be removed. There are better ways of monitoring expected life of the meter.
1.61	**Message to Consumers to the IHD**	Communication of a message from the DCC to the IHD.	On Demand: Messages to an IHD from the DCC shall be received within 1 hour.	On Demand: Variable, from single messages per meter per year to daily.	Energy saving, Avoided cost of carbon, Inbound enquiries, Load	

225 Ref.	Service	Service to be Delivered	Example Service Levels	Frequency of Transaction	Benefit Delivered	EDF Energy Comments
					shifting, Avoided site visit, Reduced customer service overheads (high-level list B)	
1.62	**Download/Clear all Existing Data from Meter**	Remote download/purge of data from a meter (within constraints of MID)	On Demand: Existing data shall be removed from 90% of Smart Meters within 1 hour.	On Demand: Data shall only be required to be downloaded/purged from a meter on an infrequent basis. Likely to be single events per year.	Energy savings, Avoided site visit (high-level list B).	
1.63	**Remote Configuration of Settings**	Remote configuration and synchronisation of settings associated with the Smart Metering system.	On Demand: Requested configuration or reconfiguration of a setting shall be acknowledged from 90% of meters within 30 minutes. The total number of commands to alter settings in individual meters in any 30 minute period can be up to 0.05% of the installed, operational meter population.	On Demand: Likely to be single events per meter per year.	Customer switching, Inbound enquiries, Avoided site visit (high-level list B).	
1.65	**Meter Read (import & export)**	Communication of meter reads on a half hourly	Scheduled: Meter read data from 99% of all meters shall be	Scheduled: Meter reads may be required on	Energy saving, Avoided site visit, Customer	

225 Ref.	Service	Service to be Delivered	Example Service Levels	Frequency of Transaction	Benefit Delivered	EDF Energy Comments
		granularity. Communication of meter reads on an aggregate level. Configurability of meter reads.	received within 24 hours. All meter reads shall be received within 24 hours. On Demand: 90% of ad-hoc read requests to be received by the DCC within 30 minutes. The total number of individual meters to be read in any 30 minute period can be up to 0.1% of the installed, operational Smart Meter population.	either a daily, weekly, monthly or quarterly basis, or as configured. Each read shall contain half hourly values and the appropriate aggregate total. On Demand: Likely to be single events per meter per year	switching, Load switching (high-level list A, G).	
1.66	**Energisation Status**	Check supply status of the premise.	On Demand: Remote checking of supply to a meter shall obtain confirmation or otherwise of supply from 95% of meters within 5 minutes. In any 5 minute period up to 0.001% of meters shall be able to be individually checked.	On Demand: Likely to be single events per meter per year.	Avoided site visit, Inbound enquiries (high-level list B).	Suggest change to Switch / valve status of electricity /gas meter. Energisation status has a specific meaning in relation to an MPAN it is therefore felt that this should be changed to refer to switch status. Likewise for gas the valve is either open or closed.

225 Ref.	Service	Service to be Delivered	Example Service Levels	Frequency of Transaction	Benefit Delivered	EDF Energy Comments
1.67	**Remote Enablement/ Disablement of Supply**	□ Remote enablement of supply. □ Remote disablement of supply.	On Demand: □ 90% of remote enablement/disablement requests to be received by within 10 minutes. □ The number of enablement/disablement requests shall be no greater than 0.01% of the installed and operation meters in any 10 minute period.	On Demand: Likely to be single events per meter per year.	Avoided prepayment change of Supplier premium, Debt handling, Avoided site visit, Smart grids (high-level list F).	
1.68	**Consumer Meter Interaction**	□ Communication of a message to notify the customer that their interaction is required to complete reconnection of supply. □ Communication of the consumer interaction to DCC.	On Demand: □ Messages shall be received by 95% of customers within 30 minutes. □ DCC shall receive messages from 95% of consumer premises within 30 minutes.	Consumer meter interaction will only be required on an infrequent basis when supply is re-enabled.	Avoided prepayment change of Supplier premium, Avoided site visit (high-level list B).	
1.69	**Switch Between Credit and Prepayment**	□ Remote switching of a customer from a credit based payment method to a prepayment method of payment. □ Remote switching of a customer from	On Demand: □ 95% of meters shall be able to remotely be switched from a credit based payment method to a prepayment method of payment (or vice versa) within 1 hour.	On Demand: Likely to be single events per meter per year.	Avoided prepayment change of Supplier premium (high-level list F).	

225 Ref.	Service	Service to be Delivered	Example Service Levels	Frequency of Transaction	Benefit Delivered	EDF Energy Comments
		a prepayment method of payment to a credit based payment method.				
1.70	**Prepayment**	□ Communication of updated prepayment balances. □ Configuration of emergency credit/debt recovery/disconnect period/alarms/etc.	On Demand: □ An updated balance shall be registered by the Smart Metering system within 20 minutes of the consumer purchasing top-up. □ 95% of meters shall be configured within 1 hour of configuration request	On Demand: Likely to be single events per meter per month.	Avoided prepayment change of Supplier premium (high-level list F).	
1.71	**Credit Balance Update**	Communication of a customer's credit balance to the IHD.	On Demand: An updated credit balance shall be displayed on the IHD within 30 minutes of request	On Demand: Likely to be single events per meter per month.	Energy saving (high-level list A).	
1.72	**Tariff Update**	Communication of tariff information to the Smart Metering system, e.g. Smart Meter, IHD.	On Demand: An updated tariff shall be received by 95% of meters/IHDs within 2 hours.	On Demand: Likely to be single events per meter per month.	Energy saving, Load shifting, TOU tariffs (high-level list A, D).	
1.73	**Supply Fault Alarm Triggered**	□ Communication of an alarm signifying the loss of electrical supply in the meter. This includes the use	On Demand: □ Loss of supply shall be reported by DCC within 5 minutes for 99.5% of the meters detecting a loss of supply.	On Demand: Likely to be single events per meter per year.	In bound enquiries, Avoided site visit, Smart grids.	Suggest this is changed to refer to electricity only. However consideration needs to be given to

225 Ref.	Service	Service to be Delivered	Example Service Levels	Frequency of Transaction	Benefit Delivered	EDF Energy Comments
		of a "last gasp" message where possible. Communication of an alarm signifying other conditions such as: over and under voltage, and overload conditions, etc.	Power restoration shall be reported by DCC within 60 minutes for 90% of the meters affected by loss of supply.			necessity, ENA currently considering the requirement in terms of "last gasp". Not possible for gas without considerable expense.
1.74	Maximum Demand Read	Scheduled: Communication of a scheduled maximum demand read. On Demand: Communication of an on demand maximum demand read.	Scheduled: Maximum demand read data from 99% of all meters shall be received within 24 hours. On Demand: 90% of ad-hoc maximum demand read request to be received within 30 minutes.	Scheduled: daily, weekly, monthly. On Demand: Likely to be single events per meter per month	Energy saving, Reduced losses (networks) (high-level list A, B).	Suggest this is changed to refer to electricity only. Is this really necessary for gas?
1.75	Notification of Failure to Obtain Reading	Communication of a message from the meter to the DCC signifying a meter reading has failed.	On Demand: A failure to obtain a reading notification shall be received by the DCC within 1 hour for 90% of meters that experience a fail in meter reading. An Acknowledgement of Meter Read Failure report shall be communicated to the meter within 10 minutes of receiving a	On Demand: Likely to be single events per meter per year	Inbound enquiries, Reduced losses (high-level list A).	

225 Ref.	Service	Service to be Delivered	Example Service Levels	Frequency of Transaction	Benefit Delivered	EDF Energy Comments
			reading failure notification.			
1.77	Gas Calorific Update	Communication of the calorific value to the Smart Metering system.	The calorific value of gas shall be transmitted to 95% of meters within 12 hours.	Calorific value of gas shall be required to be sent to a meter on a monthly basis.	Energy savings, Avoided prepayment change of Supplier premium (high-level list A, B).	
1.79	**Read Distributed Generation Data**	Communication of distributed generation reads on a half hourly granularity. Communication of distributed generation reads on an aggregate level. Configurability of meter reads.	Scheduled: data from 99% of all meters shall be received within 24 hours. On Demand: 90% of on demand read requests to be received by the DCC within 30 minutes.	Scheduled: half hourly, daily, weekly, monthly or quarterly On Demand: Likely to be single events per meter per year.	Microgeneration (high-level list G, H).	
1.80	**Feed in Tariff Update**	Communication of tariff information to the meter and IHD.	On Demand: An updated Feed In Tariff shall be received by 95% of meters/IHDs within 2 hours.	Feed In Tariff updates will only be required on an infrequent basis.	Microgeneration (high-level list G, H).	
1.83	**Electricity Quality Read**	Smart Metering infrastructure shall support remote acquisition of electricity quality data.	On Demand: Electricity quality data shall be received from 99% of applicable meters within 1 minute. Scheduled: Electricity quality data shall be received from	On Demand: single events per year per meter Scheduled: daily aggregated download per meter.	Reduced Losses (Networks), Smart Grids justification	

225 Ref.	Service	Service to be Delivered	Example Service Levels	Frequency of Transaction	Benefit Delivered	EDF Energy Comments
			99% of applicable meters within 60 minutes			
1.89	**Load Management**	□ Smart Metering infrastructure shall support the ability to send messages to appliances as well as auxiliary switches. □ Smart Metering infrastructure shall support the ability to send messages to configure different modes of operation to allow for alternative load control, event and customer driven operation. □ Smart Metering infrastructure shall support the ability to send messages to control supply capacity.	On Demand/Scheduled: □ Commands for load management shall be transmitted to 90% of meters within 5 minutes. □ An acknowledgement that a command for load management has been successfully received by the Smart Metering system shall be received by the DCC from 90% of Smart Meters within 10 minutes. □ The total number of load control commands to individual meters in any 10 minute period can be up to 0.05% of the installed, operational Smart Meters.	On Demand: It is likely that load management will be required for meters within a stressed part of the network on an infrequent basis when load is peaking. Scheduled: Daily events per meter	Energy saving, Avoided cost of carbon, Load shifting, TOU tariffs (high-level list B, E).	

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