GE Response to the DECC consultation on the technical specifications for the roll-out of gas and electricity smart metering equipment
13 October 2011

Introduction

General Electric (GE) is pleased to submit a response to the Department of Energy & Climate Change's (DECC) consultation on the technical specifications for the roll-out of gas and electricity smart metering equipment.

GE is one of the world's leading suppliers of power generation and energy delivery technologies. In the UK, our installed equipment provides 18% of energy needs and we are also a smart grid solutions partner to the electrical distribution industry. We are also a committed partner to the UK electricity networks industry supplying grid intelligence solutions.

We offer broader expertise in associated technologies such as consumer and industrial appliances and smart meter technology - in which we hope to develop a significant UK presence in the future. Within the scope of smart meters GE is a provider of:

control system technologies and transmission / distribution management solutions
geo-spatial software solutions
smart metering systems
smart appliances and home automation systems

We are proud of our presence in the UK since the 1930s and currently employ over 18,000 people. Since 2002, we have invested over £14 billion in our UK-based businesses. Our operations in Britain – which include energy, aviation and healthcare diagnostics - are at the cutting edge of low carbon, high tech, engineering, manufacturing and design, and offer pragmatic solutions to may of the challenges facing the UK today.

To reflect our commitment to address the UK's goals for a more efficient energy infrastructure, we recently acquired Remote Energy Monitoring (REM), a London-based company, whose software and hardware technologies allow consumers and utilities to better monitor and manage their energy usage. It is hoped that pairing REM's U.K. smart metering expertise with GE's worldwide metering, manufacturing and smart grid leadership will expedite the rollout of this important technology and promote employment in the UK's green economy.

Summary

GE supports the Government's commitment to the rollout of smart meters to all homes in Great Britain and is participating in the consultation on the technical specifications for the roll-out of gas and electricity smart metering equipment.

This consultation is of great interest to GE as the modular design our smart meters mean that energy suppliers can install our solution with the assurance it can be easily adapted to meet future communications and other technological advancements.

We support the proposed licence conditions which are necessary to ensure compliance and interoperability. However any licence condition needs to be accompanied by an agreed specification defined and managed by a central regulating body with an independent test house providing certification to the standard.

By making some early-informed technology decisions, technology suppliers can then advance the development of these technologies. Smart meter rollout will require an integrated approach to meet the challenges of the next decade and a lot of good work has been undertaken to get to the current specifications released although there remains a great deal to do to meet the scheduled roll-out start date by Q2 2014.

Gaps with current consultation

There is currently insufficient detail to design/manufacture product to and there are open issues needing clarification.

- Resolution of the base meter functions to allow manufacturers to develop a product.
- HAN technology selection
- ENA elements are still being debated and needs a commercially viable case

There is no apparent allowance for interim solutions during the foundation phase and as such, meters on the wall will be installed at suppliers own risk. For suppliers to become familiar with the new meter a window is envisaged of 12-18 month which will include build-up of installation capability and procurements.

Interoperability/standards

There should be a singular coordinated and ratified approach to the HAN allowing for a wired and wireless communication to deal with difficult installations. This specification should use open standards and be modified to meet the UK requirements and at the same time allow for future requirements.

A central body should first define and ensure a solid platform for interoperability and this should be defined and managed by a regulating body under strict controls. Certifying equipment as interoperable should be conducted by an independent testing body. The supplier's licence condition should then ensure this compliance is followed and equipment they are installing is interoperable.

Communications Hub

We strongly believe that the top hat or modular design meter would be a more cost effective and secure solution and that effort should be made to look in to a standard interface which can be used to house the HAN/WAN communications module. This type of meter would be suitable for installations in the majority of properties, however, an external communications hub could then be considered as a secondary option for hard to reach places. We believe that a common interface for the external communications hub could also be achieved.

Responses to Questions

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

We agree with the licence condition. This is necessary to ensure compliance and interoperability. However the licence condition needs to be accompanied by an agreed specification defined and managed by a central regulating body with an independent test house providing certification to the standard.

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

Yes the equipment should continue to meet the requirements of the SMETS throughout the operational life.

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

A central body should first define and ensure a solid platform for interoperability and this should be defined and managed by a regulating body under strict controls. Certifying equipment as interoperable should be conducted by an independent testing body. The supplier's licence condition should then ensure this compliance is followed and equipment they are installing is interoperable.

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

We agree with the licence condition. This is necessary to ensure compliance and interoperability. However the licence condition needs to be accompanied by an agreed specification defined and managed by a central regulating body with an independent test house providing certification to the standard.

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

A facility for a wired HAN needs to be added to cater for meters which are out of range of the connected HAN devices. This needs to be defined in the specification.

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

Yes. Nothing listed in the IDTS should be considered out of scope for SMETS.

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

The timescale between the completion of EU notification and the expected availability of compliant product does not allow for the development period required which has been previously communicated by BEAMA. The HAN and interoperability framework and standard is a significant portion of development which must be developed and supported in the base meter and defined in the SMETS. Additional time is then required to ramp up for production after testing periods with suppliers.

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

Yes, it should be centrally managed and supported as a code of practice.

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

The electricity meter impact assessment cost is ambitious given the additional features and functionality being defined.

Reductions will be driven by;

- Sustained volume demand >1-2M units per year (each type) allowing the investment in manufacturing automation
- Convergence to a single or fewer European meter variants
- Increases will be driven by;
- Increased labour, equipment & energy costs. Potential global demand for key components during peak times.

£43 for electricity meter is potentially achievable at high volume (depending on the commercial terms), based upon current achieved cost base, but uncertainty over certain features such as isolation switch and HAN technology will have an impact to this. £56 for gas meter is not achievable from our calculations, £70-75 is a more realistic number, based on the cost of a similar meter produced at volume in a highly automated and efficient factory. The cost reduction opportunities to further reduce the cost by a further 20- 25% cannot be identified and still achieve modularity.

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

Yes, we agree that Government should include a requirement for a Communications Hub in the SMETS. We strongly believe government should propose two solutions for the communications hub, primarily support of a top hat or modular design meter that would offer a more cost effective and secure solution and would support the majority of installations, however, an external communications hub could then be considered as a secondary option for hard to reach places.

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

Agree. A fully integrated meter will provide a more cost efficient product, but will not contain the necessary flexibility for changing the HAN or WAN communications.

35. Do you think the Smart Metering Implementation Programme objectives would be better met by: a. using the SMETS to mandate a separate Communications Hub with a fixed WAN transceiver? Or b) Giving suppliers flexibility over options for configuration of the Communications Hub33?

We strongly believe that the top hat or modular design meter would be a more cost effective and secure solution and that effort should be made to look in to a standard interface which can be used to house the HAN/WAN communications module. This type of meter would be suitable for installations in the majority of properties, however, an external communications hub could then be considered as a secondary option for hard to reach places. We believe that a common interface for the external communications hub could also be achieved.

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

There should be a singular coordinated and ratified approach to the HAN allowing for a wired and wireless communication to deal with difficult installations. This specification should use open

standards and be modified to meet the UK requirements and at the same time allow for future requirements.

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

We agree with the recommendation that all standards should be recognised by 31 December 2014, however there needs to be a suitable time frame established prior to 2014 to enable vendors to complete the design process for both meters and communications platforms

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

There needs to be comprehensive evaluation of standards from a systems point of view supporting interoperability and also understanding limitations and having mitigations for those situations. A pragmatic approach needs to be taken for foundation to gain knowledge from the existing pilots and systems.

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

We completely agree that the UK should adopt industry standard open protocols for implementation of the UK national rollout program. DLMS is a protocol that has been deployed in many installations worldwide and with the inclusion of suitable extensions will provide a stable infrastructure for offering an interoperable UK solution.

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

We completely agree that the UK should adopt industry standard communications media and open protocols for implementation of the UK national rollout program. ZigBee complete with Smart Energy Profile is a communications offering that has been deployed successfully in the UK for many of the existing pilots and trials. Our only reservation concerns propagation delays, in that an 868MHz technology may offer far greater penetration.

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

In the short term we believe that common communications platforms that support IPv4 should be adopted for the foundation stage. Longer term we would make a recommendation that the UK should consider a migration to IPv6 allowing for a common approach to be supported across multiple platforms. This would not only provide flexibility but would also future proof any investment.

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

Yes, we believe that provision of a single network-layer address for each Communications Hub is a reasonable and sufficient functional requirement for the Smart Meter WAN. This not only provides greater flexibility but also provides far better security.

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

Yes. The ability to separate and manage network related data is critical to allow a foundation for smart grid. Managing this in separate registers mean that supplier tariffs, pre-payment information is managed separately and is only accessed by the DNO via the DCC.

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

Yes. This is critical to enable innovation in the area of home energy management and keep the overall SMS secure and manageable

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

Yes. Accreditation is critical to ensuring compliance to the regulated specification.

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

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

Yes. In order to enable suppliers to move forward a different framework or code needs to be established which manages the risks but allows meters to be installed and experience gained.