

Cisco Response To Ofgem

Smart Metering Prospectus – questions requiring a response by 28
October 2010

[REDACTED]

Cisco Background

Cisco Systems, Inc. is the worldwide leader in networking for the Internet. Today, networks are an essential part of business, education, government and home communications, and Cisco Internet Protocol-based (IP) networking solutions are the foundation of these networks.

Cisco hardware, software, and service offerings are used to create Internet solutions that allow individuals, companies, and countries to increase productivity, improve customer satisfaction and strengthen competitive advantage. The Cisco name has become synonymous with the Internet, as well as with the productivity improvements that Internet business solutions provide. At Cisco, our vision is to change the way people work, live, play and learn.

Cisco delivers an end-to-end, IP-based, highly secure communications infrastructure for the smart grid, from generation to consumption. The Cisco Connected Grid portfolio covers network solutions for smart grid substation automation, AMI (Advanced Metering Infrastructure) and home energy control.

Response Overview

Cisco welcomes the opportunity to respond to the remaining questions and supporting questions from the Smart Meter Prospectus. We feel these questions and supporting answers will shape the mass deployment of Smart Meters in the UK.

Cisco is focused in a number of areas within the prospectus from both a security and communications perspective but we have also chosen to share our views and experience in a number of other areas set out in the questions. Where Cisco does not feel it is appropriate to comment or does not have experience with regards to a specific question we have entered "No Comment."

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Prospectus Question 1: Do you have any comments on the proposed minimum functional requirements and arrangements for provision of the in-home display device?

IHD Question 1: We welcome views on the level of accuracy which can be achieved and which customers would expect, in particular in relation to consumption in pounds and pence.

Accuracy is very important and there will be customer complaints if the IHD gives a different energy cost to the energy bill from the supplier. This is even more important to consumers in fuel poverty as they are likely to use the IHD to budget, if this is not accurate it has the potential for consumers to go overdrawn and incur charges. If the accuracy of the energy costing can't be guaranteed then the ability of the display to influence consumers' behaviour will be severely impacted.

The work around to this would be to use ambient feedback type approach to the energy cost although again this will not have the same impact as an accurate display that could display accurate historical stats.

Forecast bills are also important to give consumers a view of the anticipated energy spend, however they also suffer from the issue described above.

If the cost is to be displayed on the IHD all the tariff and pricing configuration should be configured by the energy retailer remotely and this should not be a requirement of the consumer as it is today in many of the clip on energy meters.

IHD Question 2: We welcome evidence on whether information on carbon dioxide emissions is a useful indicator in encouraging behaviour change, and if so, how it might be best represented to consumers.

Very few people understand the units of CO₂ usage and so a numeric display will be of little use. Ambient feedback will provide a much better mechanism, however as stated in the prospectus it may be hard to determine the CO₂ produced per KWh. The functionality should be built into the display but the use should be left as a competitive differentiator for the individual energy supplier to implement depending on the type of energy packages they are offering.

IHD Question 3: We welcome views on the issues with establishing the settings for ambient feedback.

Ambient feedback is an important aspect to allow consumers a quick view on their energy consumption. However the use of ambient feedback should also be backed up with an accurate value that gives a real time or average reading of the consumption so that it is possible to translate between the two.

We also need to be careful using ambient feedback for consumers in fuel poverty. Kettles and heating initial show as a very high usage and will often give a red indication on a traffic light scheme. However if the usage

of these devices is averaged over time it gives more realistic feedback. Thus if the ambient feedback is averaged over 15 minutes for example this will give a more realistic and usable display. It will also be in line with the gas usage reading.

IHD Question 4: Do you think that there is a case for a supply licence obligation around the need for appropriately designed IHDs to be provided to customers with special requirements, and/or for best practice to be identified and shared once suppliers start to roll out IHDs?

No Comment

IHD Question 5: We welcome evidence on whether portability of IHDs has a significant impact on consumer behavioural change.

It should be noted that a mains powered display can still be relocated, while it is not portable it does give the consumer the ability to move it to a different location. It should also be noted that the wireless signal may not reach into all areas of the premises and as such making it a less portable device may reduce the fault calls as it is less likely to be moved around the premises. The ability to plug in the device by not mandating a totally portable device also allows technologies such as powerline communications to be integrated into the device.

IHD Question 6: Do you agree with the proposed minimum functional requirements for the IHD?

In general we agree with the minimum functionally requirements. However we felt that there were some elements missing. These were:

There should be the provision to send a display message to the IHD. This would take for form of Alerts indicating a changing in pricing to informational messages about issues on the grid. Today this is a minor element of the functionality however as we move to increased renewable and require an interactive dialog with the consumer this will become a vital function.

There was no detail on how updates to the IHD would effect the SmartMeter communications. What would be the maximum allowable download and if there needs to be a throttling of this communication. Techniques such as Quality of Services (QoS) are needed to maintain effective SmartMeter comms. The effect on bandwidth of displaying account information including current account balance and time of use pricing should also be considered as this may have a significant impact on meter reading at certain times of the month and as consumers request increased rates of update.

It may not be sufficient to average the data rate over the year as has been done within the document. Also what are the mechanisms to prevent energy suppliers who are offering a differentiated service and giving the consumers additional information hogging much of the bandwidth needed for meter reading.

The comparison of energy between periods was discussed but there was no reference to the comparison at a high level between the consumer and the local community using techniques such as ambient feedback.

This may be one of the fundamental method of driving down consumption.

The use of signal strength indicator needs to be review in more detail. The consumer must know if there is no signal to allow connection of the IHD to the HAN and thus the SmartMeter, however is there a necessity for a strength indication. A simple indication displaying if there is coverage or not would be sufficient.

The use of real time or instantaneous reading for electricity should be carefully considered. Consumers will expect that when they turn of a kettle that the display reflects this immediately. A potential 5 second delay is on the boarder of being acceptable. A compromise would be a 1 second update time for the real time display but this display is only active for a short period such as 5 minutes at which time it goes back to a 15 minute average. This would be more useful to consumers and is less shocking. Seeing a real time display with high peaks may well confuse consumers and stop them using some devices such as the kettle and heater. A real time display mode would alleviate this as only consumers who wanted to see an instantaneous readout would enter this mode.

The ability for the energy supplier to see if the IHD is active should also be built into the minimum specification. This then allows the effectiveness of the IHD to be accessed and what the realistic lifespan is.

We agree there is little evidence on the effectiveness of historical information, however just defining that the display must have a historical mode may not be effective to stimulate innovation and reduce energy usage. We feel that the minimum specification should be a comparison of the consumption for the same month last year.

IHD Question 7: Do you have any views or evidence relating to whether innovation could be hampered by requiring all displays to be capable of displaying the minimum information set for both fuels?

We feel that this will increase innovation and allow suppliers to differentiate their services in the market, even when they are not the dual fuel supplier. The supplier with a more innovative and more energy usage informative IHD may well entice customer over suppliers with little innovation or information on the IHD.

IHD Question 8: Do you agree with the proposals covering the roles of and obligations on suppliers in relation to the IHD?

We do agree with these proposals. However we would like to raise an additional suggestion that would allow for the consumer to request an enhanced IHD or home energy management solution from the energy supplier in place of the basic IHD and get a credit against the cost of the standard IHD. We feel that this may incentivise some consumers to be more proactive in their energy awareness and again allows the supplier to offer differentiated level of service.

Prospectus Question 2: Do you have any comments on our overall approach to data privacy?

Privacy Question 1: Do you have any comments on our overall approach to data privacy?

Cisco feels that the approach taken by Ofgem with regards to Privacy and Security by Design is the correct one. The end to end Smart Metering system needs to be secure within all areas of potential risk such as Home Devices, The Smart Meter, Communication Links and Microgeneration interfaces.

Privacy Question 2: We seek views from stakeholders on what level of data aggregation and frequency of access to smart metering data is necessary in order for industry to fulfil regulated duties.

No Comment

Privacy Question 3: Do you support the proposal to develop a privacy charter?

We do support the proposal of a privacy charter. Consumers need to understand clearly the need for collection of Smart Metering data, it will need to be positioned that the benefits of Smart Metering are higher than the negatives and that a secure connection to the meter to collect the data is necessary.

It is key to outline solutions such as Time Of Use Tariffs, Feed in Tariffs and the possible integration of Microgeneration for Solar PV or Wind and also the potential for Electric Vehicle integration in the future . We need to demonstrate and articulate the benefits that could be achieved in each of these areas.

Without a clear definition of the need for Smart Meters and the need to access the information, the consumer cannot make an informed choice.

Privacy Question 4: What issues should be covered in a privacy charter?

The Privacy Charter needs to address potential concerns of the consumer. As the answer to question 3 above outlines, consumers need to be clear with regards to the need for a secure two way connection to a Smart Meter and the additional benefits that can be achieved.

Privacy Question 5: Do you agree with our approach for ensuring the end-to-end smart metering system is appropriately secure?

We do agree to the approach that the Smart Metering system needs to be secure End to End. To this point we believe that the adoption of a standards based approach based on protocols such as Internet Protocol (IP) will allow for this to be the case. Traditional approaches to security were designed to protect resources against threats and malware. This challenge is even more complex in an evolving security landscape.

Today, an influx of technology, devices, and communications infrastructure has expanded our ability to collaborate and stay

connected. While the benefits are clear, this brings additional risk and poses a new challenge for security. Organizations still need to defend themselves against threats, protect valuable data and resources, and implement the necessary controls for regulatory compliance.

Prospectus Question 4: Have we identified the full range of consumer protection issues related to remote disconnection and switching to prepayment?

No Comment

Consumer Protection Question 1: Do you have any views on our proposed approach for addressing potential tariff confusion? What specific steps can be taken to safeguard the consumer from tariff confusion while maintaining the benefit of tariff choices?

No Comment

Consumer Question 2: Do you agree with our proposed approach for addressing unwelcome sales activities during visits for meter installation?

No Comment

Consumer Question 3: What do you consider as acceptable and unacceptable uses of the installation visit and why?

No Comment

Consumer Question 4: Do you agree with our proposed approach to ensuring that the IHD is not used to transmit unwelcome marketing messages?

We agree with the proposed approach that the IHD should not transmit unwelcome marketing messages but would like to point out that the IHD could be used to deliver Demand Response signals and requests. Also the IHD could be used to deliver scheduled maintenance details for boilers etc reducing additional production of letters , reducing wasted callouts of engineers to customers premises.

Consumer Question 5: Do you agree that consumers should be able to obtain consumption information free of charge at a useful level of detail and format? How could this be achieved in practice?

We agree that consumers should be able to obtain consumption information free of charge. This could be achieved in multiple formats from delivery to an IHD, delivery of information to a third party device such as an IHD or tablet device and delivery of information to a third party energy management service. This information could also be delivered via an existing Set Top Box or through a secure web portal.

Consumer Question 6: Do you consider that existing protections in the licence are sufficient to ensure that consumers are not remotely switched to prepayment mode inappropriately?

No Comment

Consumer Question 7: Could provision of an appropriate IHD help overcome meter accessibility issues to facilitate prepayment usage?

We agree that the provision of an appropriate IHD with prepayment facilities could overcome meter accessibility issues and may significantly reduce the cost of prepayment systems.

Consumer Question 8: What notification should suppliers be required to provide before switching a customer to prepayment mode?

No Comment

Consumer Question 9: Do you believe that suppliers should be required to provide emergency credit and friendly credit periods to prepayment customers or whether, as now, this can be left to suppliers?

No Comment

Consumer Question 10: Do you consider that an obligation similar to Prepayment Meter Infrastructure Provision (PPMIP) may be required?

No Comment

Consumer Question 11: Is the obligation which Ofgem is proposing to introduce on suppliers to take all reasonable steps to check whether the customer is vulnerable ahead of disconnection sufficient? If not, what else is needed?

No Comment

Consumer Question 12: What notification should suppliers be required to provide before disconnecting a customer?

No Comment

Consumer Question 13: Do you have any views on the acceptability of new approaches to partial disconnection and how they might be used as an incentive to pay bills?

No Comment

Consumer Question 14: Do you agree with our approach for addressing issues related to remote disconnection and switching to prepayment?

No Comment

Consumer Question 15: Have we identified the full range of consumer protection issues associated with the capability to conduct remote disconnection or switching from credit to prepayment terms? If not, please identify any additional such issues.

No Comment

Consumer Question 16: What information, advice and support might be provided for vulnerable consumers (e.g. a dedicated help scheme)? Who should it be provided to?

No Comment

Consumer Question 17: Do you have any comments on our proposals to prevent upfront charging for the basic model of smart meters and IHDs?

Upfront charging could result in a much slower take up of Smart Metering and we feel that a basic level of IHD could be supplied or a credit giving the option to the consumer to choose a more function rich IHD capable of supporting connections to other devices in the home such as smart peripherals and thermostats.

Prospectus Question 5: Do you have any comments on the proposed approach to smaller non-domestic consumers (in particular on exceptions and access to data)?

Non-Domestic Question 1: Are there any technical circumstances where only advanced rather than smart metering would be technically feasible? How many smaller non-domestic customers have U16 or CT meters and what scope is there for full smart meter functionality to be added in these cases?

No Comment

Non-Domestic Question 2: Do you agree with our proposed approach to exceptions in the smaller non-domestic sector?

No Comment

Non-Domestic Question 3: Are there technical circumstances that we have not considered that would justify further flexibility around installation of either smart or advanced meters?

No Comment

Non-Domestic Question 4: Do you agree with the proposed approach that use of DCC should be optional for non-domestic participants in the sector?

We do broadly agree with the approach that the DCC should be optional for non-domestic participants but would also point out that larger reductions in Carbon can be achieved in this sector and some of the inherent benefits of the DCC would prove useful to the non-domestic participants.

Non-Domestic Question 5: If use of DCC is not mandated for non-domestic customers, do you agree with the proposed approach as to how it offers its services and the controls around such offers?

We broadly agree with the proposed approach, however there should be a timeline imposed for the non-domestic customer to use the DCC. This, as is stated in the document will be vital for full integration into a SmartGrid and for the Distribution network operators to manage, maintain and in the future balance their networks.

Non-Domestic Question 6: To what extent does our proposed approach to the use of DCC for non-domestic customers present any significant potential limitations for smart grids?

We feel that using the DCC for non-domestic customer will enhance the integration into a SmartGrid. Having multiple silo'd systems is not an effective method of integrating the vast amount of data that will be needed to maintain the grid in the future. We feel that having data from different sources will hamper the DNOs ability to effectively manage the grid.

Non-Domestic Question 7: Is a specific licence condition required to ensure that metering data for non-domestic customers can be provided to network operators or DCC, and should any provision be made for charging network operators for the costs of delivering such data?

No Comment

Non-Domestic Question 8: How can interoperability best be secured in the smaller non-domestic sector?

No Comment

Non-Domestic Question 9: What steps are needed to ensure that customers can access their data, and should the level of data provision and the means through which it is provided to individual customers or premises be a matter for contract between the customer and the supplier or should minimum requirements be put in place?

It is felt that if there is no minimum access to data specified these 2 million consumers will be significantly disadvantaged and may have to pay for basic information that a residential consumer receives. For Smart Meter that are installed the potential to integrate the meter into a Building area network should be offered. For very small business this may be the same technology as for the residential consumers and may also consist of an In-home display device.

However for larger consumers the ability to integrate into their building energy management systems is vital. We understand that this may not be possible for non-domestic consumer that are only provisioned with AMR meters but as these are transitioned to SmartMeters this capability should be included. The consumption information should also be available to them so that they are able to engage with 3rd party services to help manage their energy usage.

Non-Domestic Question 10: Do you agree with our approach to data privacy and security for non-domestic customers?

Yes it is vital that non-domestic consumers are able to work with 3rd parties to manage their energy usage and that these 3rd parties should

have access to the data either via the SmartMeter and the building area network or via the access control of the DCC.

Non-Domestic Question 11: Is the proposed approach to rollout (for example in terms of targets and a requirement for an installation code of practice) appropriate for the non-domestic sector?

No Comment

Prospectus Question 8: Do you have any comments on the proposals that energy suppliers should be responsible for purchasing, installing and, where appropriate, maintaining all customer premises equipment?

Our experience is that there are some elements of the system that will require specialist knowledge within the energy supplier. Areas such as the HAN will require engineers to be familiar with a number of existing and emerging protocols and may result in a significant amount of training required.

Taking into consideration that there will already be a large amount of education needed for an engineer to install and handover a smart meter, it would seem feasible that some areas of the customer premises equipment could be installed by sub contracted third parties.

The ability to fault find is one of the critical aspects, with the energy supplier or the service provider having access to the WAN module in order to perform diagnostic commands. Is it likely that the energy supplier will not have the skills to do this or the access via the DCC to perform this functions (unlike a residential user who is located next to the device). Thus it is vital that the service provider is able to see the WAN module through the communications network and they are also able to perform the diagnostics test in order to establish where they are issues with the WAN communications network or the HAN.

Prospectus Question 9: Do you have any comments on the proposal that the scope of activities of the central data and communications function should be limited initially to those functions that are essential for the effective transfer of smart metering data, such as data access and scheduled data retrieval?

Communications Business Model Question 1: Do you agree that access control to secure centrally-coordinated communications, translation services and scheduled data retrieval are essential as part of the initial scope of DCC?

Access control is a fundamental part of the DCC however we need to differentiate between access control to the meter and access control to the data.

If the DCC is providing access control to the Smart Meter then there is no requirement for translation, data retrieval, data aggregation or storage as this would all be performed at the energy supplier of DNO. However this may limit the DCCs ability to manage and control the network will limited ability to control when and how often data is being pulled from the network.

This is very analogous to the way an internet service provider manage their network. The most efficient method is for the DCC to provide access control to the Smart Meter data, providing both translation and data retrieval services. One element of the translation service is also data integrity checking. This is a low level data processing but it is felt that this should be included in the initial DCC scope. Sophisticated meter data validation should be performed by the energy supplier.

Communications Business Model Question 2: Do you agree that meter registration should be included within DCC's scope and, if so, when?

Yes meter registrations should be included in the DCC. The registration of all new Smart Meters should be handled by the DCC and not migrated at a later date. This will mean we have multiple elements handling the meter registrations for a period of time but this is not different than today. The cost of migrating the Smart Meter registrations over at a later date will not be insignificant and will bring with it the inevitable inaccuracy that is associated with migration data from one system to another.

Communications Business Model Question 3: Should data processing, aggregation and storage be included in DCC's scope and, if so, when?

This is very dependent on the requirements from the Energy Suppliers in particular. We feel that it is likely the energy suppliers will require their own data processing and storage and will purely require access to the Smart Meter data. However as we build the UK Smart Grid there will be a requirement for both a regional and a centralised data aggregation point to ensure the electricity network is properly balanced.

We do not see the requirement for data processing in the initial scope of the DCC however it is likely this will be a requirement once the DCC is established and other energy stakeholders are requesting specific data.

Communications Business Model Question 4: Do any measures need to be put in place to facilitate rollout in the period before DCC service availability and the transition to provision of services by DCC, for example requiring DCC to take on communications contracts meeting certain pre-defined criteria?

Prospectus Question 10: Do you have any comments on the proposal to establish DCC as a procurement and contract management entity that will procure communications and data services competitively?

Please see detailed answers below

Communications Business Model Question 5: Do you agree that the licensable activity for DCC should cover procurement and management of contracts for the provision of central services for the communication and management of smart metering data?

If we are to build an effective communications network to support Smart Metering and aspects of the Smart Grid then it is vital that we have a controlling entity to ensure that the network or networks perform

efficiently. However we should ensure that these communication networks are open and standards based so that as requirements and new technologies come along in the future we have not built a silo'd infrastructure that is not capable of change or providing new additional services such as electric vehicle management.

As the DCC is procuring the communication network it must consider how this network will interact with a SmartGrid, the Distribution network operators network and should endeavour to combine requirements so that we can build a converged communications infrastructure that can benefit many of the stakeholders in the energy and utility value chain.

Prospectus Question 11: Do you have any comments on the proposed approach for establishing DCC (through a licence awarded through a competitive licence application process with DCC then subject also to the new Smart Energy Code)?

No Comment

Communications Business Model Question 6: Do you consider that DCC should be an independent company from energy suppliers and/or other users of its services and, if so, how should this be defined?

Cisco believes the DCC should be an independent company to ensure the correct levels of governance needed for this program are achieved. We also believe there are existing industry bodies that are suited to this role and have vast experience of procurement, contract management and the interaction between suppliers and distributors.

Communications Business Model Question 7: Do you have any comments on the steps DCC would need to take to be in a position to provide its services and the likely timescales involved?

No Comment

Communications Business Model Question 8: Do you have any comments on the proposed approach to cost recovery and incentivisation for DCC?

No Comment

Prospectus Question 12: Does the proposal that suppliers of smaller non-domestic customers should not be obliged to use DCC services but may elect to use them cause any substantive problems?

We broadly agree with the proposed approach that small non domestic customer are not obliged to use the DCC. We feel that if they do elect to use the DCC it should offer them additional benefits rather than causing issue.

This should be an incentive for them to move to using the DCC and give them the ability to better manage their energy usage. We also

feel that there should be a timeline imposed for the non-domestic customer to be mandated to use the DCC.

This, as is stated in the document will be vital for full integration into a SmartGrid and for the Distribution network operators to manage, maintain and in the future balance their networks

Prospectus Question 13: Do you agree with the proposal for a Smart Energy Code to govern the operation of smart metering?

Please see detailed answers below

Regulation Question 1: Have we identified all of the key elements that you would expect to see as part of the Smart Metering Regulatory Regime?

No comment

Regulation Question 2: Do you agree with the proposal to establish a Smart Energy Code?

Yes we agree however Energy aggregators and energy management or service companies are only briefly highlighted. As we see companies looking to provide demand management services and aggregate renewable generation facilities they will become increasingly important in the energy value chain and as such should be more clearly defined in the Smart Energy code.

Regulation Question 3: Do you have any comments on the indicative table of contents for the Smart Energy Code as set out in Appendix 3?

No Comment

Regulation Question 4: Do you have any comments on the most appropriate governance arrangements for the Smart Energy Code?

No Comment

Regulation Question 5: Do you agree with the proposals concerning the roles and obligations of suppliers in relation to the WAN communications module?

In principle we agree as this is model that most service providers use in providing internet services to the residential market. However the ability to fault finding is one of the critical aspects here, with the energy supplier or the service provider having access to the WAN module in order to perform diagnostic commands.

Is it likely that the energy supplier will not have the skills to do this or the access via the DCC to perform this functions (unlike a residential user who is located next to the device). Thus it is vital that the service provider is able to see the WAN module through the communications network and that they are also able to perform diagnostics test in order to establish where there are issues with the WAN communications network or the HAN.

Regulation Question 6: We welcome views as to which other additional data items should be included in the mandated HAN data set beyond the list for the IHD.

The main element should be the provision for a home energy manager or controller device that will integrate into the HAN and control appliances. Due to the security considerations as well as the ongoing maintenance it is unlikely that appliances will be continually added and removed.

This would be a significant burden to the maintainer of the WAN module and is a potential security vulnerability. Thus a home energy manager is likely to be used as a proxy meaning that only one security association is required to join the Smart Meter HAN to the home energy management network.

Regulation Question 7: Do you agree with the proposal that the WAN and the HAN in customer premises should be shared infrastructure, with the installing supplier retaining responsibility for ongoing maintenance? If not, would you prefer to have an arrangement by which if the gas supplier is the first to install, responsibilities for the common equipment is transferred to the electricity supplier when the electricity smart meter is installed?

In principle yes, having a single WAN connection per customer premises with all the Smart Meters sharing this infrastructure is the most effective solution.

However the power for the WAN module must be considered if the gas smart meter is installed first. Is a gas meter installer able to have access to the line side electricity power and is able to ensure that the WAN module cannot be tampered with.

If this is not the case where will the power for the WAN module be supplied from? Is the additional cost of electricity to supply the WAN module a cost that should not be borne by the consumer if this is not line side powered.

There may be no appropriate power supply in the location without linking to the electricity meter? Option 3 is the most logical from the installation logistics but will delay the roll out as is specified.

Regulation Question 8: Are there additional measures that should be put in place to reduce the risks to the programme generated by early movers?

No Comment

Regulation Question 9: What is needed to help ensure commercial interoperability?

The use of a standards based Internet Protocol (IP) infrastructure is fundamental in allowing interoperability and future flexibility. This infrastructure decouples the physical layer (wires and radio waves) from the application layer (meter data management) enabling a wide variety of communications networks to support the business functions (Reading Meter data).

A standardised set of application protocols is also essential although less critical with the proposed translation service being offered by the DCC.

Regulation Question 10: Can current arrangements for delivering technical assurance be developed to gain cost effective technical assurance for the smart metering system? If so, how would these procedures be developed and governed?

No Comment

Regulation Question 11: Are there any other regulatory and commercial issues that the programme should be addressing?

No Comment

Prospectus Question 14: Have we identified all the wider impacts of smart metering on the energy sector?

Please see detailed answers below

Regulation Question 12: What evolution do you expect in the development of innovative time- of-use tariffs? Are there any barriers to their introduction that need to be addressed?

The barriers to introduction of time of use tariffs may be the capability of the communication network. We need to ensure the network has the ability to simultaneously signal these tariffs to a large number of smart meters as well, multicast messages on a regional basis or to different customer types. It must also allow pricing and messages to be sent directed to individual consumers.

This capability must be integrated into the communications network on day one and must also be integrated into the smart Meter specification. These messages have to be timely especially as we start to move towards dynamic pricing. This same principle also extends to demand management signals (demand response) where we need to ensure timely delivery of the messages to a subset of consumers and to ensure grid stability.

We may also require an acknowledgement from them to allow effective management of negative reserve capacity.

Regulation Question 13: Are there changes to settlement arrangements in the electricity or gas sectors that are needed to realise the benefits of smart metering?

No Comment

Regulation Question 14: What arrangements would need to be put in place to ensure that customers located on independent networks have access to the same benefits of smart metering as all other customers?

As the DCC and Energy supplier will providing the communications and will also be installing the Smart Meters and WAN module there should be no impact on consumers who are supplied from iDNOs as long as the DCC owns the meter registration for all newly installed Smart Meters.

Regulation Question 15: Are there any other industry processes that will be affected by smart metering and which the programme needs to take into account?

The management and changing control of electric vehicles should be taken into consideration. It is possible that a new smart meter will be required for each EV charging location.

This will have an obvious effect on the communications infrastructure requirements as many more Smart Meters are installed. However we also need to assess the impact on the increase in changing control messages, DCC access control mechanisms and data aggregation requirements.

Prospectus Question 15: Is there anything further we need to be doing in terms of our ensuring the security of the smart metering system?

On review of the prospectus there are two areas we feel we can highlight in need of some extra consideration and discussion. They are security of the mobile worker and integration of smart peripherals and appliances into the HAN.

With regards to the mobile workforce that will be responsible for installation of Smart Meters and education of customers, sensitive data will be provided in terms of customer addresses and key customer and supplier information. It is imperative that this data remains secure on laptops and PDA devices and that links to secure web services should be considered.

Secondly, we need to distinguish between the in premise Smart Meter security domain from the home energy management security domain. At present we feel this is not discussed in the document, however the inclusion of other energy related device into the HAN and therefore into the Smart Meter security domain is.

For an appliance or energy management device to connect/associate to the smart meter in order to obtain energy information or receive demand management signals, the device will be required to be integrated into the smart meter security domain. To maintain the required level of security will require the energy supplier to perform this association and co-ordinate device ids/MAC addresses with consumers. This in itself will be problematic, however if we scale this to numerous households wanting to added appliances and devices into the home to take advantage of new energy management capabilities the problem becomes a management nightmare for the energy suppliers. This will lead to miss configured devices and security vulnerabilities.

However by considering a home energy management security domain that is independent from the Smart Meter security domain and that requires a different level of security association this management nightmare can be reduced. A proxy such as a home energy controller is required to interface between the Smart Meter and the home energy management security domains.

The Home energy controller will have a security association with the Smart Meter but this is then only performed once at initial energy management set-up thus reducing the burden on the energy supplier. Energy Management devices and appliances are associated with the Home Energy Controller but still receive energy usage information and demand management signals from the Smart Meter via the proxy functionality of the home energy controller.. The consumers or energy management company will then be able to add, remove and edit devices and appliances within the home without needing to build complicated security associations with the smart meter. This will maintain the end to end security of the systems but will still allow consumer choice and flexibility to add energy management components.

Cisco Contacts

Please feel free to contact us should you require any further information. We are more than willing to meet to discuss in more detail any of our points raised within this response.

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