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Dear Margaret,

National Grid Response to Smart Metering Implementation Programme Prospectus

National Grid welcomes the opportunity to contribute to Ofgem's Smart Metering Implementation Programme Prospectus. We believe smart metering can support more efficient use of energy and in the future will contribute to the development of smart network solutions.

National Grid owns and operates the high voltage electricity transmission system in England and Wales and, as Great Britain System Operator (GBSO), we operate the Scottish high voltage transmission system. National Grid also owns and operates the gas transmission system throughout Great Britain and, through our gas distribution business, we distribute gas in the heart of England to approximately eleven million offices, schools and homes.

In the UK, our primary duties under the Electricity and Gas Acts are to develop and maintain efficient networks and also facilitate competition in the generation and supply of electricity and the supply of gas. Our activities include the residual balancing in close to real time of the electricity and gas markets.

Through our subsidiaries, National Grid also own and maintain around 18 million domestic and commercial meters, the electricity inter-connector between England and France with RTE, and a Liquid Natural Gas importation terminal at the Isle of Grain. In addition, the wholly owned subsidiary National Grid Carbon Limited has advanced the transportation and storage elements of the Carbon Capture and Storage (CCS) supply chain.

Our response to the consultation incorporates expertise from across our business incorporating consideration from:

- National Grid Transmission – focusing upon the proposals impact for the development of Smart networks within the UK and impacts upon the system operator role;
- National Grid Gas Distribution – providing consideration of the proposals upon network operations, safety, workforce implications and gas network impacts;
- National Grid Metering – providing consideration of the proposals on meter workforces, existing asset portfolios and gas meter functionality, and;
- OnStream – focusing upon the workforce implications and roll out proposals, with additional consideration of the meter design and functionality within gas and electricity.

National Grid's response incorporates evidence from each area of the business, if confidential information is provided this is within separate appendices, to ensure compliance is maintained.

Our response incorporates our views on the Smart Metering Implementation Programme; Prospectus, Consumer Protection, In-Home Displays, Communications Business Model, Data Privacy & Security, Regulatory and Commercial Framework and Non-Domestic.

We are committed to supporting the transition to a low carbon economy and believe both smart metering and smart grids are vital to achieving this transition.

If you have any queries regarding our response please don't hesitate to contact [REDACTED]
[REDACTED]

Yours sincerely

[By e-mail]

[REDACTED]
[REDACTED]

Executive Summary

National Grid believes the Ofgem Smart Metering Implementation Programme Prospectus provides a significant step forward in the required planning for the deployment of smart metering solutions within the UK.

Smart meters will be an important component of future energy market solutions to support the transition to a low carbon economy. Providing increased transparency of energy consumption and costs to consumers will allow informed choices regarding energy use and energy efficiency measures. Furthermore, smart metering will enable the development of new tariff solutions based on consumer preferences and on dynamic cost signals, providing new opportunities for differentiation and competition within energy retail.

Smart meters will support the development of smarter grids within the UK. Smart metering will permit improvements in the efficiency of networks, initially through improved network planning and operations and in the longer term supporting the development of demand response solutions. New mechanisms for more efficient balancing operations and optimised energy consumption across electricity and gas will be essential to support an effective transition to new low carbon energy from large scale renewable and distributed energy sources. National Grid therefore welcomes the recognition of the energy networks requirements within both the smart metering design, and within the proposed Data Communications Company (DCC) regulatory framework. We believe a Home Area Network (HAN) standard will be critical to supporting the future developments of network and energy services to the home in the transition to the low carbon economy, and therefore should be selected within the next stages of the programme.

The Government's ambition to accelerate the deployment of smart meters, to enable early benefits realisation represents a significant challenge. If this is to be achieved whilst maintaining the objectives of reducing costs and disruption to end consumers the programme must enable solutions aligned to the achievement of these objectives. We believe allowing suppliers to utilise retrofit based solutions during the deployment will support these aims through reducing the costs of providing smart solutions, enabling improved workforce efficiency and enabling a quicker deployment. This supports the Government's ambition of accelerating the deployment whilst supporting an efficient and cost effective smart metering solution for consumers.

A number further issues must also be resolved if the deployment of smart meters is to be achieved;

- reduce barriers to early investment;
- quickly finalise the smart meter specification including a HAN standard; and
- resolve stranding costs associated with traditional and smart metering.

Our detailed views on these issues are outlined within our response to the 28th September Prospectus questions.

During and following deployment of smart meters, an effective commercial and regulatory framework will be key to ensure the benefits of smart metering are achieved, and to support the development of smart grids within the UK. This will require an appropriate DCC business model in the short and long term, and a regulatory and commercial framework specifying the relationship between smart metering and all industry participants to ensure efficient energy industry processes. Furthermore the regulatory and commercial frameworks should outline clear responsibilities and the appropriate consumer protections required to realise the benefits of smart metering.

We outline our views on some of the main issues below;

Data Communications Company

National Grid support the development of the DCC as we believe this will enable all industry participants to benefit from the deployment of smart metering solutions. Critically the regulatory and commercial framework, linking the DCC and all industry participants must provide a framework to

support smart network solutions across both gas and electricity which will support the heat, transport and electricity sectors.

We agree with the proposal that the initial DCC services should support only the new solutions required by smart metering, this reduces the implementation risks of establishing the DCC, and furthermore will ensure wider industry changes are considered based on cost effectiveness prior to implementation. This could be assessed and achieved through Ofgem's proposed "Significant Code Review on Smart Metering", which should ensure the smart metering solutions are integrated within existing industry processes and data flows.

Whilst we agree with the proposed role of the DCC to procure and contract manage the data and communications solutions required, we believe it is vital to set the DCC within an appropriate governance and change control framework. The DCC governance framework must incorporate clear mechanisms to manage consumer's energy data providing robust solutions regarding access, usage and liabilities associated with managing data owned by the end consumer.

The DCC regulatory framework must recognise the linkage to physical assets installed, ensuring the communications technology selected is viable for the economic life of smart meters e.g. the initial DCC solution should be robust for c10-15 years. Any subsequent decisions to change technology should be based on a robust contract and transition assessment process, including measures to ensure backwards compatibility. The cost benefit analysis must consider the potential cost of revisiting and replacing the smart meters / communications modules if these will not be supported by the replacement technology. Such economic assessment, looking across all stakeholders, will be essential to ensure the cost effectiveness of smart metering for consumers.

National Grid believes that a successful DCC solution must be embedded within a robust regulatory and commercial framework with appropriate relationships and obligations clearly defined between the new industry role and the current industry participants. In addition a cost effective transitional plan in the short term with existing service providers and industry processes in this area will need to be assessed. In addition, if it is deemed efficient to extend the role of the DCC, beyond the initial scope, then a clear route map detailing the transition from existing service providers will be required to ensure the process is efficient to minimise costs to end consumers.

Regulatory & Commercial Framework

We welcome the approach to incorporate smart grid requirements within the smart metering functionality; however it is important to ensure the regulatory and commercial frameworks are developed to incorporate smart metering solutions within the industry, and to ensure approved stakeholders can access smart metering data and communications to support the development of new services and smart networks.

National Grid believes the deployment of smart metering will require changes within licences and codes throughout the industry to ensure the required outcomes are achieved. These changes must be incorporated in a co-ordinated manner and it is our view this will need to be conducted through the "Significant Code Review on Smart Metering" to ensure a robust and coherent smart metering regulatory regime is delivered, and hence the regulatory and commercial framework work stream within the implementation programme should be aligned to the Significant Code Review (SCR).

The smart metering regulatory regime should ensure the arrangements are fit for purpose in a smart grid environment, or sufficiently flexible to enable the incorporation of additional requirements as the smart network requirements emerge with greater clarity. For example this may relate to access to potential demand response services, which may be utilised by suppliers to balance the amount of energy they input and output from the system, distribution networks to manage localised constraints, or the system operator for residual balancing (directly or via demand aggregators). The regulatory framework for both gas and electricity must ensure access to demand side response solutions are transparent with clear rules regarding access, co-ordination and prioritisation of calls for a demand

side response and ensure system security of supply, enabling the optimisation of energy consumption as smarter networks emerge.

Ensuring the industry roles and responsibilities are clear will be required to ensure a successful deployment of smart meters to reduce complexity and provide investment certainty. We believe maintaining the obligation that suppliers are responsible for smart metering equipment at the consumer premise is appropriate as this provides cost efficiency incentives, and ensures a clear line of responsibility for smart solutions within the home. In line with this we would welcome clarification regarding the current MPOLR obligations placed on gas transporters. We believe the MPOLR does not apply for smart meters and that in order to provide certainty we request that these licence conditions be lifted as soon as possible, as highlighted within the ROMA consultation.

We believe the DCC regulatory framework should therefore be focused on providing a robust and secure communications solution to support smart metering, providing the maximum coverage to ensure that when the supplier or their agent install a smart metering solution, it can connect to the DCC via the wide area network (WAN) regardless of where it is installed within the premise, and ensuring appropriate systems are implemented to enable industry access to smart metering data.

Consumer Protection & Data Privacy/Security

The consumer experience of smart metering will need to be positive to support consumer engagement. The opportunity to engage end consumers through the smart metering deployment enables education regarding the benefits of smart metering and to inform consumers of other energy efficiency programmes, such as the Green Deal, providing the potential to improve the efficiency of energy usage.

Consumer protection can be achieved by ensuring:

- consumers can control who has access to their data,
- industry processes are robust and secure with appropriate solutions regarding access, usage and liabilities associated with consumer data,
- the smart metering solution is installed efficiently with minimum disruption and informing consumer of how to use the solution, and;
- the appropriate protections remain robust regarding switching to prepayment and consumer disconnections.

In addition ensuring the regulatory and commercial framework supports retail competition and enables suppliers to make cost-effective decisions regarding the smart metering deployment will ensure consumer's interests are protected. For example, allowing retrofit solutions during the initial deployment provides a number of benefits, the impacts on gas distribution networks will be reduced, workforce efficiency is improved, and traditional asset stranding costs which will be borne by consumers are also reduced enabling a more cost effective deployment. In the longer term as existing assets are replaced based on the end of residual life, new and replacement assets incorporate the universal valve, which over time will support the assumed benefits regarding increased prepayment availability and reduce the risk of stranding smart metering assets.

Ensuring the security of the smart metering system is vital to allow consumers to remain confident regarding the technology solutions implemented, and furthermore to ensure networks remain resilient, maintaining security of supply. We welcome the approach to incorporate the security elements and risks at an early stage of the DCC design process to ensure the industry communications, data and interconnection across industry participants are robust and provide the protection required,

Response to Questions – 28th October

Our response is structured as follows:

- Prospectus Consultation Response
- Consumer Protection Response
- In Home Display Response
- Communications Business Model Response
- Data Privacy & Security Response
- Regulatory and Commercial Framework Response
- Non Domestic Response

National Grid Response to questions within “Smart Metering Implementation Programme Prospectus”

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

We believe the key outcome is improving end consumer's awareness of their energy consumption and encouraging behaviours to optimise energy consumption. This will require information to be made easily available to consumers in a format they choose whether that is an IHD, the web, or a mobile phone based solution. As alternative consumer focused solutions emerge, it may be appropriate to review the mandated provision of in-home display devices (IHD).

As highlighted within the Prospectus, it is essential that open standards are used to govern the way that IHDs communicate with the smart meters and other appliances on the HAN. Open standards will encourage innovation and the development of advanced IHDs, home automation and energy management products.

Ensuring the consumer receives accurate information will be vital to maintaining consumer confidence. Gas is traditionally measured as a volume rather than energy, and will therefore require smart meters to hold a localised measure of CV data to enable conversion to price and kWh metrics for provision to consumers.

Furthermore, the frequency of updates to the IHD should be based on consumer preference or evidence of behavioural change. The current proposal to transmit gas consumption information to the IHD every 15 minutes will significantly impact the expected smart gas meter battery life and increase costs, with potentially limited benefits to the consumer as gas consumption tends to be less discretionary, with lower requirements for real-time updates.

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

National Grid believes end consumer control of personal data is the appropriate approach. End consumers expect their private data to be treated securely and smart metering solutions must deliver this to maintain consumer confidence. International evidence highlights that minor failures can result in reduced consumer confidence and acceptance of smart metering solutions¹. A successful accelerated deployment will be dependant on end consumer confidence within the smart metering solution.

Data privacy and security issues have disrupted smart metering projects in various countries around the world. Ofgem's approach of analysing the data security impacts and interacting with bodies such as the Information Commissioner's Office (ICO) and Centre for the Protection of National Infrastructure (CPNI) at this stage of the UK rollout in order to incorporate available expertise is welcomed. This

¹ E.g. PG&E deployment received significant media and consumer group attention requiring further asset testing and assurance processes following a number of complaints. Following a review 1% of the meters deployed were found to have been ineffectively installed and hence created an issue – however this resulted in delay to the deployment, increased costs and a proposal by consumer groups to prevent smart metering installations

privacy by design approach should ensure that problems that have been experienced elsewhere are not repeated in the UK.

Consumer concerns regarding privacy may be resolved through appropriate restrictions placed on the DCC to limit activities and through establishment of a privacy charter, preventing activities such as data mining or aggregation to sell to external organisations. This will require appropriate frameworks to support provision of data where a regulatory obligation exists, whilst preventing wholesale commercial usage of aggregated data.

National Grid support the position outlined within the Prospectus, highlighting *"the customer shall choose in which way consumption data shall be used and by whom, with the exception of data required to fulfil regulatory duties"*. Based on this proposal it is anticipated the data required to operate an efficient, safe and environmentally focused regulated networks, and to support system operations would be made available by the DCC in order to fulfil regulatory duties, both now and as future requirements emerge.

In addition it should be noted, that non-regulated industry participants, such as meter asset providers (MAP) and meter asset managers/operators (MAM/MOP) may require access to specific information from their smart metering portfolio. Whilst not requiring consumption data, MAP/MAMs may require diagnostic information to improve asset management processes and enable condition based maintenance of battery exchanges; consideration should be given to ensure the relevant parties can access supporting information.

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

The consumer protection issues outlined relating to remote disconnection and switching to prepayment appear appropriate, however safety and secondary meter issues should be considered within the framework.

For safety reasons, following disconnection of supply by a pre-payment meter, the consumer is required to be present in the home to re-activate the supply after a check that appliances are safely turned off. It has been agreed that a similar process must apply for smart meters following a disconnection in prepayment mode. Industry experts are agreed that it would be unsafe for supply to be restored unless the consumer is in the premise. In addition, both the gas and electricity meters will need to be accessible to enable consumers to manually add credit in situations where the remote communications have failed. Both situations rely on the meters being suitably located for ease of access which may require meters to be relocated within the premise or an alternative solution developed within the industry. Whilst this functionality can be incorporated within the IHD as suggested, this is likely to increase the unit cost, and require battery backup to ensure the IHD can support accessibility following self-disconnection in prepayment mode.

Protection for consumers using secondary meters should also be considered. To date, if a primary meter is a prepayment meter, gas safety regulations state secondary meters shall not be installed, this is due to the impact on secondary customers and inability to ensure appliances in secondary premises are safe prior to re-connection. On this basis, rules must be established to ensure where a primary gas meter incorporates a valve, this is de-activated. Alternately the valve closure on the primary meter should simultaneously trigger closure of valves in all attached secondary meters.

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

National Grid agrees that for non-domestic consumers the IHD should be optional. Non-domestic consumers should be able to receive information from their energy supplier in their chosen format and suppliers should not be obliged to provide an IHD that may be entirely inappropriate for the consumer.

The opportunity for smaller non-domestic consumers to choose whether or not to use the DCC is welcomed; this approach could be extended to early deployed domestic smart meters in order to address the issue of stranding. However, whilst accepting this is pragmatic as a market is already developing well within this segment, we believe further thought must be given to the regulatory and commercial framework to ensure higher energy consumption sites can be integrated with smart grid solutions in the future, primarily participation within demand response solutions required by either suppliers, networks or the GBSO. In the event that regulatory and commercial frameworks cannot provide the equivalent services within the non-domestic sector it may be appropriate to accelerate the transition of the non domestic sector to the requirement to utilise DCC services.

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?

We believe the existing proposals are appropriate, energy suppliers and their agents are best placed to decide the solution for their customers, and are currently the key point of contact for consumers; however the proposals regarding “Lead Supplier” adds complexity, uncertainty and potentially increases costs, therefore this concept should be reconsidered.

The approach of energy suppliers retaining responsibility for smart metering solutions within the home is appropriate as this aligns with the existing framework. This reduces the impacts of change and enables either suppliers or their appointed agents to appropriately manage assets based on existing expertise. We believe the commercial and regulatory framework should be established to reflect these obligations to clearly articulate the responsibilities of each industry participant and the appropriate interactions and service levels.

National Grid believes that whilst the commercial and regulatory frameworks must support instances where the smart metering infrastructure is shared, this should not prevent the use of stand alone solutions which potentially reduce complexity and commercial issues within the industry. The current proposals regarding the “Lead Supplier”, requiring transfer of asset ownership and maintenance responsibilities, adds significant complexity and uncertainty for asset providers. This will require significant development of appropriate industry processes to support transfer of ownership, maintenance responsibilities and potential liabilities and hence will increase costs and risks of deployment. This may delay the deployment of smart meters if the framework and processes are not quickly established and transparent. In addition shared assets and infrastructure will require clear processes to ensure the customer can identify the appropriate party to ensure any faults, or service issues are resolved efficiently.

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?

We support the proposal that the initial DCC services should support only the new solutions required by smart metering, this reduces the implementation risks of establishing the DCC, and furthermore will ensure wider industry changes are considered based on cost effectiveness prior to implementation. This could be assessed and achieved through Ofgem’s proposed “Significant Code Review on Smart Metering”, which should ensure the smart metering solutions are integrated within existing industry processes and data flows.

We believe excluding meter point registration from the initial DCC scope is appropriate as this reduces the risks of establishing the DCC. The DCC can link to the existing meter registration agents, enabling improvement of industry processes as data is cleansed throughout the deployment, improving data quality and consistency of data used within the industry. Furthermore, relevant industry participants will be identifiable based on the access controls provided by the DCC.

The meter registration data is not uniquely required by the DCC and performs a number of functions throughout the industry, therefore greater consideration is required prior to changing the existing arrangements. The meter registration data residing with the network companies in electricity and Xoserve in gas is required by networks for network planning, and calculating network charges, which requires the identification of the supplier at each meter point, and the control to add new sites. Therefore maintaining the existing arrangements with meter registration data held by networks is appropriate, as this can be provided to the DCC utilising secure and robust data flows.

In future, consideration to extend the scope of the DCC may be appropriate; however this should be based on a phased approach with a clear cost/benefit case to justify the transition. In addition, if it is deemed efficient to extend the role of the DCC then a clear route map detailing the transition from existing service providers will be required to ensure the process is efficient to minimise costs to end consumers.

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

Whilst we agree with the proposed role of the DCC to procure and contract manage the data and communications solutions required, we believe it is vital to set the DCC within an appropriate governance and change control framework. The DCC governance framework must incorporate clear mechanisms to manage consumer's energy data providing robust solutions regarding access, usage and liabilities associated with managing data owned by the end consumer.

The DCC regulatory framework must recognise the linkage to physical assets installed, ensuring the communications technology selected is viable for the economic life of smart meters e.g. the initial DCC solution should be robust for c10-15 years. Any subsequent decisions to change technology should be based on a robust contract and transition assessment process, including measures to ensure backwards compatibility. The cost benefit analysis must consider the potential cost of revisiting and replacing the smart meters / communications modules if these will not be supported by the replacement technology. Such economic assessment, looking across all stakeholders, will be essential to ensure the cost effectiveness of smart metering for consumers.

National Grid believe that a successful DCC solution must be embedded within a robust regulatory and commercial framework with appropriate relationships clearly defined between the new industry role and the current industry participants. In addition a cost effective transitional plan with existing service providers and industry processes in this area will need to be assessed.

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)?

National Grid believes the approach for establishing the DCC and future compliance with the new Smart Energy Code is appropriate.

The Smart Energy code creating the framework between the DCC, energy suppliers, networks and 3rd parties with regards to access to smart metering data and communications will need to outline the commercial and regulatory relationships for the enduring smart metering solution. Furthermore this must incorporate flexibility for support incorporation of smart grid requirements as they emerge, through appropriate linkage throughout the existing industry codes; we believe this should be undertaken through the "Significant Code Review for Smart Metering".

The initial Smart Energy code will need to support the provision of data regarding consumption and network usage to energy suppliers and networks respectively. However, in the longer term the smart metering communications may support a number of outcomes such as; providing demand response to energy suppliers/or demand aggregators based on market incentives, providing demand response to distribution networks to manage localised constraints or providing demand response to the System

Operator to reduce peak demand/generation reserve. The requirements of these solutions, the appropriate prioritisation and framework to support these outcomes is yet to be determined and will evolve over time, therefore as the framework linking organisations to the smart metering communications solution, the Smart Energy code will require flexibility to ensure this change can be managed appropriately across both gas and electricity markets.

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?

National Grid believes it is appropriate to exclude smaller non-domestic customers from the obligation to use the DCC in the short term; this approach could be extended to early deployed domestic smart meters in order to address the issue of stranding. As the market is developing smart metering and advanced metering solutions, we believe this solution is pragmatic.

Where the smart metering communications data and service is not provided by the DCC based on this exception, the regulatory and commercial framework must be established to support the development of smart networks and demand response solutions. This framework should ensure suppliers provide the required data to networks to improve network planning, and furthermore should enable the development of demand response solutions within the non-domestic sector.

Within the domestic sector, the DCC will enable networks and the GBSO to access smart metering data and communications to support the development of smart networks and demand response, in the event that regulatory and commercial frameworks cannot provide the equivalent services within the non-domestic sector it may be appropriate to accelerate the transition of the non domestic sector to the requirement to utilise DCC services.

In addition, if the scope of the DCC extends to incorporate meter registration, the appropriate amendments would be required to ensure consistency of data flows for non-domestic and domestic consumers. Furthermore incorporating non-domestic consumers within the DCC may improve the change of supplier process within the non-domestic sector reducing the requirement to replace assets.

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

The development of an appropriate smart metering regulatory regime will be vital to ensure the deployment of smart metering is efficient and the role and responsibilities of all industry participants, including the newly established DCC are clearly defined.

National Grid agree with the proposal for a Smart Energy Code to govern the operations of smart metering, this will be required to ensure all industry stakeholders have access to appropriate data to enable the operation of safe and efficient networks aligned with the UK's energy requirements and carbon emissions targets.

The indicative Smart Energy Code contents provided within the "Regulatory and Commercial Framework" consultation appear appropriate, however during the development of the Smart Energy Code we believe consideration should be given to the structure of the code to ensure it provides flexibility for future industry change.

National Grid agrees the deployment of smart metering will require changes within licences and codes throughout the industry to ensure the required outcomes are achieved. We believe the new elements and amendments proposed are appropriate, however these changes must be incorporated in a co-ordinated manner and it is our view this will need to be conducted through the "Significant Code Review on Smart Metering" to ensure a robust and coherent smart metering regulatory regime is delivered, and hence the regulatory and commercial framework work stream within the implementation programme should be aligned to the Significant Code Review (SCR).

The smart metering regulatory regime should ensure the arrangements are fit for purpose in a smart grid environment, or sufficiently flexible to enable the incorporation of additional requirements as the smart network requirements emerge with greater clarity. For example this may relate to access to potential demand response services, which may be utilised by suppliers to balance the amount of energy they input and output from the system, distribution networks to manage localised constraints, or the system operator for residual balancing (directly or via demand aggregators). The regulatory framework for both gas and electricity must ensure access to demand side response solutions are transparent with clear rules regarding access, co-ordination and prioritisation of calls for a demand side response and ensure system security of supply, enabling the optimisation of energy consumption as smarter networks emerge.

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

National Grid believes the smart metering deployment will have impacts throughout the energy sector, however these will emerge overtime, and hence the Smart Energy code must provide sufficient flexibility to incorporate changes.

We believe the “Significant Code Review for Smart Metering” should be utilised to identify all of the wider impacts and ensure the appropriate industry code modifications are considered.

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

National Grid believe ensuring the security of the smart metering system is vital to ensure consumers remain confident regarding the technology solutions implemented, and furthermore to ensure networks remain resilient. We agree the approach and the stakeholder engagement identified is appropriate. The National awareness campaign may be an ideal medium to convey the message to consumers that smart metering data is secure.

There are a number of layers of security required.

Local Security

The smart metering solution should be secure against tampering, both physical and electronic. This should ensure any physical tampering can be identified, furthermore where the WAN device is not incorporated within the smart meter either gas or electricity, it should be ensured the devices cannot be accessed or hacked via either an optical port or through the HAN. This may be achieved through restricting access to the metering software available on location without a secure device provided to authorised technicians.

In instances, where the metering solution uses a single WAN either embedded within the electricity meter or as an additional asset, the device must be secure to ensure the readings provided from the metering assets are encrypted, to ensure they cannot be captured during communications, furthermore the WAN must be capable of determining authorised readings, to ensure artificial readings are not provided from a device mimicking the gas or electricity meter. This will require appropriate software to be incorporated within the WAN device, to provide the required internal access and security control.

DCC Security

The communications from the metering solution to the head-end server provided by the WAN service provider must also be secure and encrypted, the meter should be programmed to accept incoming instructions only from an approved address to ensure meters and the associated IHD cannot be ‘spammed’, this increases security as the meter rejects incoming information from sources other than the approved DCC.

Based on the information stored by the DCC and ability to communicate with all smart meters deployed, the DCC premises are expected to incorporate sufficient site security to prevent inappropriate use of the communications solutions, and furthermore it is expected the DCC will further provide sufficient resilience planning should the primary site suffer technical or other issues.

Network Security

National Grid believe the ability of the DCC to disconnect every meter in the country, or even within a localised area requires appropriate security processes to be deployed to ensure network integrity is maintained, in the event of a system failure triggering remote disconnections or an intentional act to disrupt the energy system. This could potentially take the form of preventing significant volumes of disconnections without the approval/authorisation of either the relevant network if concentrated within a region, or the System Operator if dispersed nationally.

National Grid Response to questions within “Smart Metering Implementation Programme: 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?

National Grid believes the most suitable approach to addressing tariff confusion is to ensure information provided to consumers, regarding the tariff choices available to them are clearly communicated. We agree with the approach that consumers must be informed of the tariff details, and must agree to the tariff solution before it is applied.

Smart meters represent an opportunity to significantly increase the number of tariffs available to consumers within the energy market. Whilst, this may increase confusion, the additional consumption information will enable informed choices regarding consumption and selection of tariffs that meet consumer's requirements, Ofgem's approach of working with consumer groups should consider how to ensure consumers receive appropriate tariff clarity.

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

The consumer experience of the smart metering installation process will need to be positive to support consumer engagement. The opportunity to engage end consumers through the smart metering deployment enables education regarding the benefits of smart metering and other energy efficiency programmes, however as identified by Ofgem the process must be governed carefully so as not to undermine the deployment in terms of installation efficiency and access rates, which may result from 'unwelcome' sales.

National Grid believes the installation code of practice, will support a positive consumer experience, it will therefore need to be sufficiently robust to ensure the installation process is focused upon the meter exchange and providing the required information to consumers to ensure they understand and can use the smart metering solution. The installation code of practice will need to clearly outline the restrictions regarding sales activities, outlining when these may be offered, e.g. if requested by the consumer.

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

National Grid believes the installation process should primarily be focused on the meter exchange and providing the required information to consumers to ensure they understand and can use the smart metering solution. The installation visit should potentially also provide further details of where additional information can be obtained regarding energy efficiency and associated services and advice from independent sources.

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

We believe the key outcome is improving end consumers awareness of their energy consumption and encouraging behaviours to optimise energy consumption. This will require information to be made easily available to consumers in a format aligned to their individual requirements whether that is an IHD, the web, or mobile phone based solution. As alternative consumer focused solutions emerge, it may be appropriate to review the mandated provision of IHDs.

If IHDs are implemented to provide additional information, it appears appropriate this is limited to energy efficiency advice or information regarding changes to the consumer's existing tariff. If the IHDs are utilised to provide marketing messages, a proposal whereby the consumer opts in, may be more appropriate to an opt-out as it reduces the requirement and inconvenience for the consumer to actively

opt-out. If the opt-out process requires effort by the consumer they are increasingly likely to simply unplug the IHD to avoid the marketing messages.

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?

Ensuring consumers can access their consumption information at a useful level of detail and format will be necessary to support consumer engagement and awareness of energy consumption.

However, consumer's preferences and the level of detail and formats required will vary significantly for individual consumers, and therefore this requirement will require appropriate definition.

The consumer could receive consumption information via the HAN to either the standard or an upgraded IHD or alternative device (e.g. RF dongle to connect to laptop) for free, based on purchase of the required device. Furthermore consumers could receive additional granularity and detail regarding historical consumption via paper or online billing.

Providing further information free of charge will be dependant upon the definition of the useful level of detail and format, and how this could be supported based on varying consumer requirements.

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?

Ensuring that when a smart meter is switched to prepayment mode it remains safe and practical for consumers to use the smart metering solution is appropriate.

As with existing prepayment solutions, in the event of disconnection whilst in prepayment mode the consumer will require access to the meter to safely re-enable supply. Therefore ensuring the meter is safely accessible when switching to prepayment mode will be required.

To maintain consumer confidence in smart metering, the process of switching to prepayment mode must be transparent and clearly articulated to consumers to ensure they understand the process, the implications, how to use prepayment solutions and the alternative options available to them.

The existing protections appear to support the majority of outcomes in terms of the licence requirements; however supplier processes will need to be established to ensure the appropriate consumer protection is applied during the switching process.

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

Incorporating the interface required to support prepayment solutions within the IHD could help overcome meter accessibility issues, providing the device supported re-enablement of supply following disconnection, and the ability to add additional credit manually through the secure HAN.

Incorporating the functionality required to support this such as encrypted two way communications, an input interface and a back-up battery to ensure the IHD remains operational following self-disconnection in prepayment mode, will increase the unit cost of the IHD solution. In addition, a solution will be required to support this functionality in the event the smart gas meter is in sleep mode, as the meter will not receive the instruction to reconnect or add credit until the next active period.

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

National Grid believes the notification process should prompt the consumer to acknowledge the switch to prepayment mode and inform the consumer of the methods available to add credit, the exact

method should be determined by suppliers providing the process confirms to an agreed level of notification.

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?

The increased ease of providing prepayment solutions will require appropriate frameworks to protect vulnerable consumers, to ensure they aren't inappropriately switched to prepayment solutions. Whilst, the emergency credit and friendly credit solutions may provide a safety net in a number of instances, the provision of these services forms an element of the service offering from energy suppliers and hence should be left to suppliers.

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

National Grid believes a range of solutions will emerge to support the process of adding credit to prepayment meters; however, we believe other industry participants are better placed to confirm whether the PPMIP obligation is still required.

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?

National Grid believes suppliers should take all reasonable steps to identify whether a consumer is vulnerable prior to remote disconnection. We believe remote disconnection should in all instances be a last resort, with clear procedures to ensure a robust process has been followed and other viable solutions exhausted prior to remote disconnection.

Following any remote disconnection, the process to re-enable supply including a check of appliances prior to a meter button push to re-activate supply should also be made clear to the consumer.

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

National Grid believes suppliers should provide sufficient information to ensure the process and alternative options are clear to consumers prior to a remote disconnection, to ensure consumer understanding.

Furthermore, if the process is carried out remotely without a site visit, the consumer should be provided with information regarding the reconnection process, e.g. checking appliances are turned off prior to re-enabling supply.

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?

National Grid believes the new approaches to partial disconnection will require appropriate protections to be implemented to protect consumers aligned with protections required for a switch to prepayment and remote disconnection. Other than ensuring consumers interests are protected and load-limiting is only implemented when appropriate, we believe the approach to adopt this as a solution to debt management rests with the energy suppliers.

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

It is important to ensure that when a smart meter is switched to prepayment mode or the consumer is remotely disconnected the solution remains safe and practical for consumers to use the solution. The

current approach appears appropriate, however flexibility should be incorporated as greater knowledge of the process emerges during deployment.

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.

The majority of consumer protection issues appear to have been identified within the consultation. However, the interaction between elements of the smart metering solution must be considered.

The consultation highlights the potential for the IHD to act as the interface to the prepayment meters, where the meters are not accessible. Whilst IHDs may support this incorporating functionality such as encrypted two way communications, an input interface and a back-up battery to ensure the IHD remains operational following self-disconnection in prepayment mode, will increase the unit cost of the IHD solution. Hence ensuring consumers can access smart meters prior to disconnection or switching to prepayment is potentially required.

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?

As with all consumers, the smart metering deployment should be a positive experience for vulnerable consumers. The installation code of practice should incorporate appropriate protections and provision of advice during installation to ensure vulnerable consumers are informed and have sufficient information to minimise inappropriate actions (e.g. reducing lighting and heating).

We agree utilising trusted local charities, consumer groups and local authorities may be required to support the deployment to vulnerable customers and to provide appropriate advice regarding energy efficiency and scope of behavioural change, or whether to limit the provision of IHDs if it is found they drive inappropriate behaviour within vulnerable customer groups.

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

National Grid believe the approach outlined within the consultation is appropriate, as highlighted within the document the nature of a competitive market should ensure the supplier costs incurred from smart metering are efficient. In the event that suppliers adopt a charging model not aligned with consumer requirements, the competitive market provides the opportunity to change suppliers; this may provide sufficient constraint as opposed to additional restrictions. However, we agree if this is not sufficient to protect consumers from upfront charges for the basic model of smart meters and IHDs an additional mechanism should be considered.

National Grid Response to questions within “Smart Metering Implementation Programme: In Home Display”

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.

National Grid agrees providing accurate information to consumers will be required to maintain consumer engagement with smart metering solutions and the IHD.

To achieve a relevant level of accuracy the smart metering system will require the functionality to store calorific value (as per “catalogue”) data to utilise in the calculation of gas consumption costs in pounds and pence, which can then be transmitted to the IHD. As highlighted within the document, this will represent a challenge to 100% reconcile with the end consumers bill, due to variances in calculation methodologies.

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

National Grid agrees that providing information on carbon dioxide emissions may be beneficial to some consumers, and will increase awareness of energy consumption and carbon dioxide. However, this is likely to be an estimate based on average measure of carbon dioxide intensity, based on the generation mix and will potentially required additional context to be useful to consumers.

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

National Grid agrees ambient feedback provides valuable feedback to consumers, providing easily recognisable triggers to alter behaviours. However, as highlighted this will require appropriate support to protect vulnerable consumers.

Incorporating flexibility within the IHD to enable a range of parameters to influence the ambient feedback settings appears appropriate; however, the additional cost implications of increasing the processing power within the device, and identifying the appropriate settings for a range of consumer segments may increase the complexity of the IHD solutions.

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?

National Grid support the recognition that the smart metering solutions developed must include solutions suitable for customers with special requirements, and suggest these are provided as required to meet the individual consumer’s requirements.

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

National Grid has no further evidence regarding the impact of portability of the IHD on consumer’s behaviour. However, if portable, batteries will be required which may reduce the useful life of the IHD unless this is supported with a recharging station, which will increase the unit cost.

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

Yes, however we believe it may be appropriate to incorporate the ability for the IHD to receive a message from the smart metering solution via the HAN from; suppliers, network operators, MAMs and relevant service providers. This functionality could be utilised to inform consumers of a tariff change, or

in future utilised by the industry to highlight to consumers the following day is a critical peak price day and request a reduction in consumption between the appropriate hours.

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?

National Grid believes the minimum functionality of the display should incorporate the capability to provide information for both gas and electricity consumption as in the majority of installations this will prevent the requirement for two IHDs to be provided. Where consumers have separate suppliers for each fuel, the choice is clearly with each supplier as to whether they wish to provide a separate display to the consumer if they believe this is required or will benefit the customer.

Utilisation of a standardised HAN should enable all meters to connect to each other and the available IHDs and therefore if the consumer requires a single display, it appears appropriate that the second installation should provide consumption information through the existing IHD, as opposed to providing a second device, unwanted by the consumer.

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

Yes, however we believe continued engagement of consumers with energy consumption will only be achieved if information is provided in the format required by consumers, whether this is through IHDs, the internet, TV or mobile phone applications.

We believe these solutions will develop over time and will support future demand response solutions and hence the existing approach to the IHD appears appropriate, other than in the instances outlined where the IHD is being used as an interface to support prepayment metering solutions.

National Grid Response to questions within “Smart Metering Implementation Programme: 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?

National Grid agrees that the scope of the DCC should include access control, centrally-coordinated communications, translation services and scheduled data retrieval services.

Providing a centrally-coordinated communications solution and appropriate access control will be required to ensure smart metering data remains secure and accessible only by authorised parties, key to ensuring end consumers remain confident regarding the usage of their consumption data. Incorporating translation services and scheduled data retrieval reduces the potential cost overlap if multiple industry participants are required to procure head-end solutions, and hence supports both interoperability and enables access to all industry participants.

We believe this represents the new functionality required by the industry to support the deployment of smart meters and the development of smart grids and hence agree these services will be required from the DCC on day 1.

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

We support the proposal that the DCC should support only the new solutions required by smart metering, this reduces the implementation risks of establishing the DCC, and furthermore will ensure wider industry changes are considered based on cost effectiveness prior to implementation. This could be assessed and achieved through Ofgem’s proposed “Significant Code Review on Smart Metering”.

We believe excluding meter point registration from the DCC scope is appropriate as this reduces the risks of establishing the DCC. The DCC can link to the existing meter registration agents, enabling improvement of industry processes as data is cleansed throughout the deployment, improving data quality and consistency of data used within the industry. Furthermore, relevant industry participants will be identifiable based on the access controls provided by the DCC.

The meter registration data is not uniquely required by the DCC and performs a number of functions throughout the industry, therefore greater consideration is required prior to changing the existing arrangements. The meter registration data residing with the network companies in electricity and Xoserve in gas is required by networks for network planning, and calculating network charges, which requires the identification of the supplier at each meter point, and the control to add new sites. Therefore maintaining the existing arrangements with meter registration data held by networks is appropriate, as this can be provided to the DCC utilising secure and robust data flows.

In future, consideration to extend the scope of the DCC may be appropriate; however this should be based on a phased approach with a clear cost/benefit case to justify the transition. In addition, if it is deemed efficient to extend the role of the DCC then a clear route map detailing the transition from existing service providers will be required to ensure the process is efficient to minimise costs to end consumers.

Question 3: Should data processing, aggregation and storage be included in the DCC’s scope and, if so, when?

No, data processing and data aggregation should not be incorporated within the scope of the DCC. Suppliers and other industry participants already have the capability to provide these services within the industry and hence the wider impacts of centralising these services, alongside a robust cost/benefit case should be considered prior to these services being integrated within the DCC.

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?

Investment certainty will be required for parties to commence the deployment prior to the establishment of the DCC.

The existing proposals, whilst defining the functionality required, provide limited investment certainty to support the financing requirements of smart metering deployment. In order that smart metering assets can be provided cost effectively they must be expected to have a 10-15 year economic life. However, the current proposals indicate that smart meters deployed prior to 2013 are subject to stranding risk, unless they are adopted by the DCC, through a process that is not yet identified. The uncertainty that investors will face under such circumstances can be expected to increase the costs or even discourage early smart metering deployments.

To reduce this uncertainty and enable an early deployment the Programme must;

- At the earliest opportunity incorporate the WAN technical requirements for a range of technologies within functional specifications and commit the DCC to accept these solutions where they have been deployed, or;
- Develop arrangements exempting early installations from the obligation to use the DCC and allow them to remain in place for their expected service life.

We believe reducing the stranding risk associated with early smart metering deployments should be a priority of the Programme to enable the market to begin providing cost effective smart metering solutions that contribute to the accelerated deployment ambitions.

We believe the transition to the DCC services must be clarified to enable the early deployment of smart meters, either based on confirming the technology solutions the DCC will be obligated to adopt, or through provision of an exemption for early deployments, enabling them to remain in place for their service life, providing they continue to provide the services required by the energy supplier.

Based on the majority of pre-DCC installations being based on GSM, due to availability of national coverage, it may be beneficial to confirm the DCC will adopt GSM solutions, and incorporate this requirement within the appointment process of the DCC prior to developing additional solutions in the future.

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?

Yes, National Grid agree that the DCC should focus on the delivery of secure and robust smart metering communications, with the appropriate management of smart metering data required to support industry processes. We believe a key element of this process will be the interaction between licensees within the industry which will need to be clearly defined through the Smart Energy Code.

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?

National Grid believes the DCC should provide impartial services to authorised industry participants requiring access to smart metering communications. This will require the appropriate regulatory and commercial frameworks to define impartiality and ensure appropriate approaches are undertaken in instances of multiple requests for services requiring a degree of prioritisation.

Impartiality could either be established based on granting the licence to an independent organisation, or through appropriate conditions within the licence to ensure that if the DCC is affiliated with industry

participants, the licence forces operations to be conducted on an arms length, transparent basis to ensure impartiality.

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

National Grid believes the approach outlined broadly represents the stages required for the development of the DCC following the development of the DCC licence and commercial and regulatory frameworks within the Smart Energy code.

The DCC is a fundamental element of the smart metering solution proposed and as such must be established in a manner and framework that enables it to provide the robust solutions required by the industry.

The Smart Energy code creating the framework between the DCC, energy suppliers, networks and 3rd parties with regards to access to smart metering data and communications will need to outline the initial relationships, with an appropriate process for future amendments. This could be assessed and achieved through Ofgem's proposed "Significant Code Review on Smart Metering".

The Smart Energy code will need to support the provision of data regarding consumption and network usage to energy suppliers and networks respectively. However, in the longer term the smart metering communications may support a number of outcomes such as; providing demand response to energy suppliers/ demand aggregators based on market incentives, providing demand response to distribution networks to manage localised constraints or providing demand response to the System Operator to reduce peak demand/generation reserve. The requirements of these solutions, the appropriate prioritisation and framework to support these outcomes is yet to be determined and will evolve overtime, therefore as the framework linking organisations to the smart metering communications solution, the Smart Energy code will require flexibility to ensure this change can be managed appropriately.

The existing timeline for establishing the DCC, following the development of the appropriate licences and Smart Energy code is highly condensed from granting the DCC licence to the DCC establishing and integrating the full suite of service providers, and hence options should be considered to enable elements of the DCC implementation programme to run in parallel to reduce the potential risk of overrun or delays in the DCC implementation.

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

The DCC as the exclusive provider of smart metering communications and access control will require a robust regulatory agreement/framework to ensure the services provided to the industry are efficient and aligned to the requirements of the industry.

The approach outlined within the consultation looks appropriate, however we believe the DCC incentives should incorporate a linkage to the overall smart metering solution. The emphasis placed on the competitive procurement processes to deliver cost effective solutions, whilst appropriate, must recognise that the communications solutions selected must support smart metering solutions installed for their expected asset life of 10-15 years, when contracts are re-tendered therefore, if awarded to an alternative provider, these solutions must be backwards compatible to support existing installations. If communications solutions are re-tendered and awarded to new providers without consideration for existing assets this may result in asset stranding or may overestimate the benefits of re-tendering through failing to consider the costs to the entire industry which are ultimately borne by consumers.

National Grid Response to questions within “Smart Metering Implementation Programme: Data Privacy & Security”

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

Maintaining consumer privacy will be key to successfully delivering the smart metering deployment due to the strong linkage between privacy and consumer confidence.

National Grid believe incorporating privacy throughout the development of the smart metering solution will enable the appropriate mechanisms to be embedded within the regulatory and commercial frameworks and furthermore will ensure the DCC framework incorporates robust solutions regarding access, usage and liabilities associated with managing data owned by the end consumer.

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.

National Grid believe the level and frequency of data required from smart metering solutions by the industry will evolve significantly over time based on a number of drivers, and potentially to fulfil requirements beyond the current regulated duties.

We believe the level of data aggregation acceptable to meet network requirements will decrease overtime, whilst the frequency of access required will increase. Initially focused on providing data to improve network planning, over time increasing levels of data will be required by networks to support the development of smart networks, requiring a greater level of granularity and frequency of data, which will further increase overtime to support more active network control as demand response solutions emerge.

The framework implemented to ensure consumer privacy should be flexible to ensure the availability of data can be amended in future as the requirements of the energy networks increase to support the development of smart grids.

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

National Grid believes this is an appropriate approach to ensure consumers are informed and confident with the industries approach to their personal information.

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

National Grid believes the privacy charter should incorporate a clear description of the methods in which end consumer data may be utilised throughout the industry, incorporating both supplier and network requirements, and the frameworks utilised to protect consumer's privacy.

The charter should clearly articulate the rationale behind the uses of the data, to inform consumers of the benefits to them and the industry and furthermore should incorporate clear processes to enable consumers to identify who has access to their data.

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

The end-to-end security of the smart metering system will be vital to ensuring the delivery of energy within the UK remains robust, efficient and secure. We believe the approach outlined regarding engagement of security experts is appropriate and would welcome further engagement.

National Grid believe ensuring the security of the smart metering system is vital to ensure consumers remain confident regarding the technology solutions implemented, and furthermore to ensure networks remain resilient. We agree the approach and the stakeholder engagement identified is appropriate. The National awareness campaign may be an ideal medium to convey the message to consumers that smart metering data is secure.

There are a number of layers of security required.

Local Security

The smart metering solution should be secure against tampering, both physical and electronic. This should ensure any physical tampering can be identified, furthermore where the WAN device is not incorporated within the smart meter either gas or electricity, it should be ensured the devices cannot be accessed or hacked via either an optical port or through the HAN. This may be achieved through restricting access to the metering software available on location without a secure device provided to authorised technicians.

In instances, where the metering solution uses a single WAN either embedded within the electricity meter or as an additional asset, the device must be secure to ensure the readings provided from the metering assets are encrypted, to ensure they cannot be captured during communications, furthermore the WAN must be capable of determining authorised readings, to ensure artificial readings are not provided from a device mimicking the gas or electricity meter. This will require appropriate software to be incorporated within the WAN device, to provide the required internal access and security control.

DCC Security

The communications from the metering solution to the head-end server provided by the WAN service provider must also be secure and encrypted, the meter should be programmed to accept incoming instructions only from an approved address to ensure meters and the associated IHD cannot be 'spammed', this increases security as the meter rejects incoming information from sources other than the approved DCC.

Based on the information stored by the DCC and ability to communicate with all smart meters deployed, the DCC premises are expected to incorporate sufficient site security to prevent inappropriate use of the communications solutions, and furthermore it is expected the DCC will further provide sufficient resilience planning should the primary site suffer technical or other issues.

Network Security

National Grid believe the ability of the DCC to disconnect every meter in the country, or even within a localised area requires appropriate security processes to be deployed to ensure network integrity is maintained, in the event of a system failure triggering remote disconnections or an intentional act to disrupt the energy system. This could potentially take the form of preventing significant volumes of disconnections without the approval/authorisation of either the relevant network if concentrated within a region, or the System Operator if dispersed nationally.

National Grid Response to questions within “Smart Metering Implementation Programme: Regulatory and Commercial Framework”

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

The development of an appropriate smart metering regulatory regime will be vital to ensure the deployment of smart metering is efficient and the role and responsibilities of all industry participants, including the newly established DCC are clearly defined.

National Grid agrees the deployment of smart metering will require changes within licences and codes throughout the industry to ensure the required outcomes are achieved. We believe the new elements and amendments proposed are appropriate, however these changes must be incorporated in a co-ordinated manner and it is our view this will need to be conducted through the “Significant Code Review on Smart Metering” to ensure a robust and coherent smart metering regulatory regime is delivered, and hence the regulatory and commercial framework work stream within the implementation programme should be aligned to the Significant Code Review (SCR).

The smart metering regulatory regime should ensure the arrangements are fit for purpose in a smart grid environment, or sufficiently flexible to enable the incorporation of additional requirements as the smart network requirements emerge with greater clarity. For example this may relate to access to potential demand response services, which may be utilised by suppliers to balance the amount of energy they input and output from the system, distribution networks to manage localised constraints, or the system operator for residual balancing (directly or via demand aggregators). The regulatory and commercial framework will need to establish whether multiple parties can access demand side response from a single consumer, and if multiple parties have access how the requests are co-ordinated and prioritised to ensure security of supply is maintained.

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

National Grid agrees the development of a Smart Energy Code is appropriate and will be important to establish the relationship and commercial frameworks between the DCC and all industry participants on a basis suitable for smart metering solutions and future smart grid solutions. Furthermore the Smart Energy Code covering both fuels will support greater interaction across both gas and electricity networks services which will be essential to support the transition to new low carbon energy sources.

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

National Grid believes the indicative table of contents for the Smart Energy Code is broadly appropriate, however we believe the parties to the code should incorporate the GBSO which dependant upon the development of smart grid solutions may utilise the DCC either directly or through third parties for demand response solutions. Furthermore, the Smart Energy Code should incorporate a process for 3rd parties to access the DCC solution; this could potentially include meter operators requiring access to obtain metering diagnostics for asset management purposes.

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

The governance arrangements for the Smart Energy Code will need to provide flexibility to modify the code as the energy industry evolves to incorporate wider usage of consumption data and operation information provided by smart metering and future smart grid solutions. The governance arrangements will therefore require suitable representation and decision making mechanisms to reflect the requirements both of the energy suppliers and the network businesses to ensure appropriate arrangements to support the development of smart networks.

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

Yes, National Grid believe that providing the minimum functional requirements are met, energy suppliers and their asset managers are best placed to select technology solutions that meet the outcomes required cost effectively.

We believe maintaining the obligation that suppliers are responsible for smart metering equipment at the consumer premise is appropriate as this provides cost efficiency incentives, and ensures a clear line of responsibility for technology solutions. Furthermore, maintaining the existing obligations regarding the provision of metering equipment at consumer premises reduces the complexity and risks associated with the provision of smart metering solutions and provide greater clarity regarding the industry roles and responsibilities.

Ensuring the industry roles and responsibilities are clear will be required to ensure a successful deployment of smart meters. Based on the expectancy that regardless of asset ownership of the communications module the supplier or their agent will be responsible for installing and maintaining the communications module, it appears appropriate the ownership risk also rests with these organisations.

Extending the scope of the DCC role to procuring communications modules, and managing the logistical processes associated with providing these to suppliers or their asset managers will increase the level of complexity, compared with the solution whereby the suppliers or their asset managers, procure metering solutions aligned to the technical requirements based on established distribution and logistics processes. In addition, in the scenario where the DCC owns the module, but the supplier or their agent is responsible for installation, the DCC has no control over the installation process to maximise coverage; hence ownership doesn't guarantee a reliable communications solution.

We believe the DCC function should therefore be focused on providing a robust and secure infrastructure to support the communications solutions to smart metering solutions, providing the maximum coverage to ensure the WAN connects to smart metering solutions regardless of where it is installed within the premise, and ensuring appropriate systems are implemented to enable industry access to smart metering data.

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.

National Grid believes the mandated HAN data set should potentially be limited to those required to support the IHD, however we believe a HAN standard is required to ensure the HAN can support additional requirements as they emerge including potential linkage and transfer of tariff information to smart appliances or home controls to optimise energy consumption.

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?

National Grid believes the framework regarding the responsibility for installation and maintenance of the smart metering equipment within the home must be robust to ensure safety standards are upheld and the participants responsible for each component of the smart metering installation can be identified. In the event of any issues with the smart metering installation, the relevant party must be quickly identifiable to ensure the situation is quickly rectified to ensure the consumer receives a satisfactory service with minimum disruption.

We believe each smart metering device, the gas meter, electricity meter and the IHD will require a HAN module, which based on a HAN standard and industry agreed protocol, can connect to each

other regardless of asset ownership – thus each individual HAN module is owned by the relevant supplier or their appointed agent, but connection between solutions would create a shared HAN solution.

We believe the commercial and regulatory framework will be required to support instances where the smart metering solutions share a single WAN device within the home, whether embedded within the electricity meter or as a separate device, this will clearly need to incorporate an applicable charging framework to support the DCC charges incurred by both the gas and electricity supplier, and will also require a mechanism to ensure the owner of the communications module, either separate or embedded within the electricity meter can charge the appropriate stakeholder for usage of the asset.

We believe of the 3 options considered, options 1 and 2 represent the most suitable options to support the deployment of smart metering, and believe the framework will be required to support both instances, e.g. provide mechanisms to support both a shared WAN solution and to support the independent WAN solutions. Whilst, the document indicates option 1 increases costs by £2.1bn, we believe this is a significant over estimation of the differential between scenarios. This is based on a number of factors;

- Firstly whilst deployment of two WANs will increase expenditure on metering assets, the increased asset cost is potentially offset by the reduced installation time, associated with installing a separate device.
- Secondly a standalone solution reduces disruption to the consumer, if the gas meter is to be installed first, the consumers electricity supply will be disrupted to install the WAN module and then again for the installation of the electricity meter on a second occasion.
- Thirdly, installation of separate WAN modules has no impact on the HAN costs as in each instance each device requires a HAN module to connect to each other.
- Fourthly, installation of separate WAN modules has no impact on the ability of a single IHD to support each fuel
- Finally enforcing option 2, particularly if transfer of responsibility is incorporated significantly increases the complexity and potential risks of deploying smart metering, and would require robust processes, and contractual agreements to ensure asset transfers are efficient, with appropriate agreements regarding transfer of ownership, maintenance responsibilities and associated liabilities for future asset failures following transfer of ownership.

Therefore we believe the framework will be required to support instances where the WAN device is shared, however we believe the decision of whether to deploy independent smart metering solutions, providing they meet the minimum functionality and can connect to the DCC, the technology solutions within the home is best made by suppliers and their agents who can make the decision based on meeting their consumers requirements in the most cost effective manner, and enabling innovation in the development of technologies deployed.

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

National Grid believes that early deployments will provide benefits in terms of learning, and contributing towards the challenging deployment schedule if the smart metering deployment is accelerated.

We believe quickly finalising the smart metering technical specification and confirming the acceptable WAN technologies the DCC will adopt is the most appropriate measure to reduce risks, or alternatively excluding early deployments from the obligation to utilise the DCC enabling early smart meters to remain in place for their economic life, whilst they continue to meet the requirements of the energy supplier and the consumer, reduces stranding risks and inconvenience to end consumers.

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

National Grid agree the commercial frameworks will need to support commercial interoperability, as this provides the investment certainty required to finance the large scale deployment of smart metering.

National Grid believes regulating the rates set for the transfer of meters within a competitive market is inappropriate. Following this approach, when an end consumer changes supplier, the incoming supplier would then receive a regulated meter rental rate from the competitive metering provider at the site, inevitably this regulated meter rental rate would set the market price for smart metering solutions, which in a competitive market would be inappropriate.

We support the recognition, that for commercial interoperability to succeed the industry data flows must be robust to support the commercial frameworks, the ability to identify the asset owner and the energy supplier at each site is critical to supporting this, and if as highlighted within the previous question, shared assets are incorporated, this will require appropriate amendments within the industry data flows and commercial frameworks.

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?

National Grid believes the increased capability of smart meters to provide diagnostic information regarding asset performance and tampering alerts may reduce the costs of technical assurance through reducing the frequency of site visits, however as highlighted this will require robust analysis of the risks and health and safety considerations and requires the supplier to provide appropriate evidence.

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

As highlighted by 4.29 to 4.31, under the Gas Transporter Licence, Gas Distribution Networks are required to supply domestic meters when requested to do so through Standard Special Condition A10: Provision and Return of Meters (the so called meter provider of last resort obligations).

This condition states that “the licensee shall comply with any reasonable request by a relevant supplier to provide through a meter asset manager and install at the premises of a domestic customer a gas meter owned by the licensee and of a type specified by the supplier subject, however, to a meter of that type being reasonably available to the licensee and the supplier agreeing to pay its charges in respect of the meter.”

These obligations have been removed from the electricity metering market, and we recognise they are being considered for the gas metering market within the Ofgem Review of Current Metering arrangements. We believe clarification regarding Standard Special Condition A10 is required along with consideration and clarification regarding the status of the gas metering price control tariff caps specified under Special Condition E19: Restriction of prices in respect of Tariff Capped Metering Activities.

Under Standard Special Condition A10 Gas Distribution Networks continue to install new “dumb” meters to comply with their licence obligations. In view of this requirement, adequate funding of these assets should be addressed to compensate stranding exposure.

If Standard Special Condition A10 remains in place then Ofgem has a duty, to ensure that Gas Distribution Networks receive adequate funding to facilitate the significant, initial and ongoing, investment in new systems, tools, training, resource and policies and procedures that will be required to deliver this obligation.

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?

National Grid believes time-of-use (TOU) tariffs will be required to support demand response services and to encourage a reduction in peak-energy consumption. This may take the form of TOU tariffs to encourage long term behavioural changes, such as delaying consumption. This may in future be supported by the development of smart appliances which can react automatically to the relevant energy price obtained from the HAN. Alternatively, peak reduction solutions may develop based on critical-peak-pricing, whereby consumers are informed prior to the day that energy will cost significantly more during peak hours the following day, to encourage a reduction in consumer demand.

We believe these tariffs will develop over time, based on a number of factors, firstly consumers will require appropriate information and confidence to agree to alternative tariff structure and suppliers will need to develop new innovative tariff solutions attractive to their end consumers, whether these tariff solutions are focused on cost reflectivity or meeting consumer requirements remains to be seen.

As highlighted within the consultation, increasing energy supplier incentives to balance their energy inputs and outputs within the system and to increase supplier exposure to the peak network costs through the settlements or alternative processes may encourage wider reflection of real costs within consumer tariffs.

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

National Grid believes the existing settlement arrangements in both gas and electricity must be maintained and any amendments should go through the existing robust change and governance processes to ensure settlements arrangements remain robust.

We note there are continuing modification processes and change programmes under consideration within the settlements processes which are considering the impacts of smart metering upon settlements arrangements. We believe this is appropriate, however, this process must reflect a gradual transition throughout the deployment of smart metering solutions to ensure settlements arrangements remain robust for both smart metering and traditional metering solutions for the duration of the deployment process.

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?

National Grid agrees appropriate linkages between the independent distribution networks (iDNOs and iGTs) will be required to support the smart metering benefits, this potentially requires alignment of systems utilised by distribution networks.

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

National Grid believes the majority of industry processes have been considered within the programme document.

National Grid Response to questions within “Smart Metering Implementation Programme: Non-Domestic Sector”

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?

National Grid would agree that to date the primary solutions used for U16 sized meters and above are advanced metering solutions, as opposed to smart metering solutions, and are based on retrofit solutions attached to the pulse output. We believe the functional capabilities of these retrofit devices could be increased to add additional functionality; however this again is constrained by the benefits case due to the limited volume in comparison to potential development and production costs. We would anticipate U16 sized meters to utilise retrofit based solutions, as opposed to an integrated smart metering solution and would not expect to install a valve based solution at these sites.

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

National Grid agrees the approach to exceptions appears appropriate.

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

National Grid believes the approach outlined in terms of suppliers being required to take all reasonable steps provides sufficient flexibility in the event the supplier cannot install a smart or advanced meter for reasons outside of the criteria highlighted.

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

National Grid believes it is appropriate to exclude smaller non-domestic customers from the obligation to use the DCC in the short term; this approach could be extended to early deployed domestic smart meters in order to address the issue of stranding. As the market is developing smart metering and advanced metering solutions, we believe this solution is pragmatic.

Where the smart metering communications data and service is not provided by the DCC based on this exception, the regulatory and commercial framework must be established to support the development of smart networks and demand response solutions. This framework should ensure suppliers provide the required data to networks to improve network planning, and furthermore should enable the development of demand response solutions within the non-domestic sector.

Within the domestic sector, the DCC will enable networks and the GBSO to access smart metering data and communications to support the development of smart networks and demand response, in the event that regulatory and commercial frameworks cannot provide the equivalent services within the non-domestic sector it may be appropriate to accelerate the transition of the non domestic sector to the requirement to utilise DCC services.

In addition, if the scope of the DCC extends to incorporate meter registration, the appropriate amendments would be required to ensure consistency of data flows for non-domestic and domestic consumers. Furthermore incorporating non-domestic consumers within the DCC may improve the change of supplier process within the non-domestic sector reducing the requirement to replace assets.

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

National Grid agrees the approaches outlined are appropriate, whilst non-domestic customers are not obligated to use the DCC, if additional industry functions are incorporated within the DCC in future, the non-domestic customers should align to these solutions to prevent the need for separate domestic and non-domestic solutions, particularly given the potential cost to support a reduced volume of assets within the non-domestic sector is unlikely to be economic.

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

National Grid believes the approach regarding non-domestic customers use of the DCC whilst currently appropriate may require further consideration as smart grids develop. Whilst the consumption information provided to networks through DCUSA conditions will support improved network planning if received more frequently, the solution will not provide networks with access to the communications channel to the smart metering solutions if required to enable demand response solutions to manage localised constraints. The regulatory and commercial framework should therefore be established to enable demand response solutions.

Dependant on the development path of smart grids and the commercial and regulatory framework regarding the provision of demand response services, potentially by 3rd parties, access to the smart meter communications may or may not be required by networks, as other industry participants may potentially provide the demand response as a service based on an agreement with the end consumer.

Therefore whilst the approach may not limit the development of smart grids, developing an appropriate framework to ensure demand response solutions are supported by the approach remains important, if this cannot be supported consideration should be given to incorporating non-domestic customers within the DCC solution.

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?

National Grid believes that over time as the networks requirements for increased information regarding network data is required to support more efficient planning, operations and network control the current DCUSA conditions may require review if the frequency of data required increases significantly.

The potential amendments to the licence conditions or the changes to existing arrangements should be considered within the development of the Smart Energy Code and through the "Significant Code Review of Smart Metering" to ensure the amendments are appropriately informed.

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

National Grid believes a degree of interoperability will be delivered as a result of the smart metering technical standards being developed, and note significant work has been undertaken within the industry to deliver interoperability within the advanced metering sector which could potentially be applied to elements of the non-domestic sector.

A further enabler could take the form of ensuring open standards, or as is the case within HH metering, ensuring the protocols incorporated within advanced meters are released by the meter manufacturers through appropriate commercial arrangements.

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?

National Grid believes if non-domestic consumers are to benefit from the deployment of smart metering the consumption data provided must be suitably frequent and at an appropriate level of detail to inform their future energy management decisions.

The engagement of non-domestic consumers with energy consumption will vary significantly based on the size, energy intensity and flexibility regarding energy consumption; however provision of a smart meter should be used to increase awareness of energy consumption and potentially encourage wider adoption of energy management solutions, either directly or through appointment of an energy management service. The exact requirements however remain a commercial decision to be made between suppliers and their customers.

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

National Grid agrees that the data and privacy for non-domestic consumers should be considered, the approach outlined appears broadly appropriate, however within the framework established it should be ensured the privacy and security solutions are aligned to the requirements of the segments as the issues will differ between non-domestic and domestic consumers and therefore the solutions should be appropriately aligned as opposed to a 'one-size fits all' approach.

Where solutions are implemented that are not encompassed within the DCC, a degree of confidence will be required to ensure the smart metering solutions deployed and the associated communications solutions are secure, robust from interference and remain resilient.

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?

National Grid believes the approach to roll out in terms of targets and installation code of practice is broadly appropriate for the non-domestic sector, however this will require a degree of flexibility and should not simply replicate the domestic solution.

Non-domestic premises and metering installations will have a wider range of metering solutions installed and will have differing requirements in terms of the usage of the meter and the installation process, dependant upon their businesses energy requirements, therefore a degree of flexibility will be required within regards to the installation process. Furthermore, the level and type of engagement with non-domestic customers will vary significantly as the individuals present during the metering installation may not be in a position to change the business processes or energy management solutions, and therefore provision of information and guidance regarding the benefits of smart metering to the non-domestic consumer will need to be appropriately tailored.