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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.

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, Statement of Design Requirements, Implementation Strategy and Roll out Strategy.

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 Adam Lloyd on 0207 0043231 or email adam.lloyd@uk.ngrid.com

Yours sincerely

[by E-mail]

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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.

National Grid believes a number further issues should 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, resolve stranding costs associated with traditional and smart metering, define the DCC regulatory framework and enable the industry to deploy cost effective solutions.

Enabling early deployment of smart meters is essential because the accelerated completion of the programme will be highly challenging if the start of deployment is delayed until 2013, furthermore early installations provide opportunities for learning to identify the most cost effective smart metering solutions.

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

Investment certainty - Interim deployments

Accelerating the deployment¹ represents both a significant operational and financing challenge for the energy industry. 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,

¹ Rollout Strategy consultation highlights 85% of households to receive their smart meter by end of 2017

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 note the suggestion for a modular installation approach as a way to reduce obsolescence risk for the early installations. Whilst a modular approach may provide some additional flexibility it may not mitigate the risks as it increases both the asset and installation costs. The cost of a second visit to update or exchange a module limits the cost effectiveness of the approach. We believe this requires further review incorporating a robust cost/benefit appraisal.

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.

Meter functionality

National Grid welcomes the incorporation of the smart network requirements within the technical specification. Smart meters can provide additional network usage information to support the development of smart networks, and enable the development of demand response solutions in the longer term, to support greater efficiency of gas and electricity networks. Recognition within the functional requirements of the need to control secondary circuits is welcomed as in future this may offer solutions to support electric vehicles and micro-generation.

We believe the expert groups should be tasked with quickly finalising the specifications to enable early deployment. The technical smart metering specification will require balance to ensure the solutions implemented are robust and support the required outcomes, whilst not preventing innovation and competition, essential for a cost effective deployment.

Therefore we believe the current proposals require further consideration:

- **Modular WAN** – The modular approach may provide greater flexibility in the future; however the approach may increase unit costs, installation complexity, and increases the potential fraud and safety risks. We believe energy suppliers and their asset managers are best placed to select technology solutions that meet the minimal functional outcomes cost effectively, therefore mandating a modular design is inappropriate without a robust benefits case.
- **HAN Standard** – A HAN standard is required as part of the minimum technical functionality to support a number of consumer benefits. A HAN standard is required to ensure that where gas and electricity smart meters are installed separately they can both communicate with each other and the end consumers In Home Displays (IHD). Furthermore, a HAN standard will enable innovation providing greater confidence to white goods manufacturers and 3rd parties. Without a HAN standard the development of these solutions may be delayed. A standardised HAN is amongst the most important elements for engaging end consumers and enabling additional service developments. It is vital to ensure that there are no barriers to the development of future demand management and optimisation solutions required by consumers in the transition to a low carbon economy across both electricity and gas.

Early clarity on the final specification will support the accelerated deployment of smart metering and will reduce the stranding risks associated with smart meter deployments prior to 2013, thus we believe this should be completed at the latest within 6 months.

Stranding

The earlier government impact assessment based on roll-out by 2020, identified significant stranding value associated with traditional meters, indicating those costs would fall on energy suppliers or meter asset providers depending on the regulatory or commercial contracts in place. Many of the gas and electricity meters to be displaced will have been installed under regulatory obligations. It was suggested that parties that had been obligated by regulation to install meters should approach Ofgem to discuss how their stranded costs should be compensated.

The current proposals increase both the stranding costs associated with traditional metering assets and also increase the stranding risks associated with early deployments of smart meters. The current impact assessment highlights an increase of ~£50m stranding costs as a result of the accelerated deployment², and the staged deployment selected incurs stranding of £820m compared to £657m. We believe stranding poses a number of risks to the smart metering deployment, and thus should be resolved.

The ambition to accelerate the smart metering deployment to replace 85% of existing assets by 2017 further increases the stranding costs borne by consumers. A significant volume of assets displaced will have been installed under regulatory obligations both within electricity and gas metering. The traditional meter stranding costs will be maximised by the decision to incorporate a valve within every gas meter, we believe this prevents the use of cost-effective alternatives such as retrofit devices which provide a majority of the benefits whilst reducing the costs of deployment. Furthermore we are concerned the impact assessment has underestimated the potential benefits of enabling suppliers to utilise retrofit solutions where they provide a cost effective solution to meet end consumer requirements.

Whilst stranding costs have limited bearing on the NPV valuation and the selected approach, within the Smart metering impact assessment, they will be borne by energy consumers; either as a result of costs incurred or increased smart metering deployment risks. Therefore, the standing costs associated with each option should be considered. We believe Ofgem should establish an appropriate regulatory and commercial framework to minimise traditional meter stranding, and to reduce the stranding risks associated with smart metering deployment.

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 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".

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

² Compared to DECC 2009 Impact assessment

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.

Efficiency of Deployment

The accelerated deployment of smart metering will require a significant increase in the number of meter workers. These installers will need different technical and customer service skills to ensure an appropriate consumer experience. We believe the accelerated deployment of smart metering will require pragmatic and flexible approaches. The deployment of smart metering will increase potential workforce constraints; we believe that retrofit solutions could assist in reducing these constraints and associated costs to support an efficient and cost effective smart metering roll out.

The consultation document highlights that a significant increase in meter exchanges will lead to an increase in the level of network support required to resolve 'end-of-network' problems discovered during the meter exchange visit. Continued priority attention to such issues will be vital to support the smooth delivery of smart metering. National Grid Gas currently supports metering work in this way; the work is ordinarily unplanned and thus can impact upon the workforce that provides emergency gas escape services. The potentially greater workload and the potential conflict of priorities will require enhanced arrangements which should be considered under the Distribution price control review.

Each year National Grid Gas undertakes a large number of network activities that require interruption at the emergency control valve (ECV). We believe it may be beneficial to utilise each of these supply interruptions as an opportunity to install a smart meter thereby avoiding the need for a second interruption on a different occasion, if requested by energy suppliers. The installation job could be undertaken through a commercial arrangement in a similar manner to the existing Post Emergency Metering Services (PEMS) contract, whereby the asset is transferred to the supplier's preferred MAP following installation. Whilst remaining a choice for suppliers this may reduce disruption to consumers, reduce workforce constraints and increases the speed and efficiency of deployment.

Our detailed response to the questions required by the 28th September is provided below.

Response to Questions – 28th September

Our response is structured as follows:

- Prospectus Consultation Response
- Statement of Design Requirements Response
- Implementation Strategy Response
- Roll out Strategy Response

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

Question 3: Do you have any comments on the proposed approach to ensuring customers have a positive experience of the smart meter rollout (including the required code of practice on installation and preventing unwelcome sales activity and upfront charging)?

We believe the smart metering installation process should create minimum disruption for consumers. The code of practice for smart metering installation should support this process and ensure consumers receive a positive experience and understand all aspects of the metering system including the IHD.

The aspects incorporated within the installation code of practice³ appear appropriate. We agree that sales activities during the installation process should be restricted to ensure consumers are protected from unwelcome sales activities. The code of practice must therefore outline clear distinctions between “unwelcome sales” and provision of energy efficiency advice.

The metering installation code of practice should aim to ensure the consumer receives sufficient information to enable usage of the smart metering solution provided whilst, enabling meter worker utilisation to remain efficient. Obligations should ensure transparency regarding expected time on site to ensure meter worker scheduling can be managed effectively. Furthermore, the code of practice should incorporate clear roles and responsibilities to ensure that where work is carried out on the metering system (for example installation of the second meter from an alternative supplier) the metering system remains fully functional following completion of the activity.

We would expect the installation code of practice to align with other industry codes to ensure consistency of qualifications and competency of meter workers throughout the industry. The accelerated deployment of smart metering will require a significant number of new meter workers who will need training to ensure that safety and other aspects of meter installation are maintained at a high standard.

A positive consumer experience of smart metering installation process will improve consumer engagement. The “Roll Out Strategy” paper⁴ identifies that the accelerated deployment of smart meters will increase the volume of ‘business as usual’ work requested from networks following meter exchanges such as; meter repositioning, dealing with difficult installations or other work required to complete the installation. We welcome the recognition of these important issues and the support for work now ongoing with industry organisations to resolve these matters.

Question 6: Do you have any comments on the functional requirements for the smart metering system we have set out in the Functional Requirements Catalogue?

National Grid believes the functional requirements catalogue is an appropriate step forwards to ensuring the requirements of both suppliers and networks are incorporated within the smart metering solutions deployed. However a number of the elements contained within the functional requirements

³ “Roll-Out Strategy” p35-36

⁴ “Roll Out Strategy” p33

should be reconsidered due to the implications for cost effectiveness, consumer benefits, safety, and workforce impacts.

Our primary comments, regarding the functional requirements catalogue are;

Modular WAN/HAN – whilst the modular WAN/HAN may provide future benefits we believe this decision is best determined by energy suppliers and their appointed agents to select technology solutions to cost effectively meet the required outcomes. We therefore believe modularity should not be mandated without a robust cost/benefits analysis being conducted.

Standardised HAN – The HAN forms a key enabler of interoperability between the gas and electricity smart meters, and home display units, we therefore believe a standard for the HAN is required

Gas meter specification – Two elements regarding the gas meter specification should be considered

- **Battery life** - Mandating 15 minute updates to the IHD will significantly constrain the battery life of the gas metering solutions and should not be mandated
- **Valve** – Whilst accepting a universal valve provides flexibility in future, and reduces smart stranding risk, we believe it maximises the stranding risk associated with traditional metering assets and prevents the use of retrofit based solutions which may reduce workforce constraints and provide a cost effective solution during the initial deployment.

Electricity meter specification – We welcome the incorporation of network requirements within the functional catalogue and have a number of recommendations

- **Frequency measurement** – Whilst not necessarily transmitting the data, we believe the meter should be capable of measuring frequency every second
- **Harmonic distortion** – We do not believe this can be incorporated within every meter, without a significant increase in costs, due to additional processing power required

In addition to the specific comments above, we believe the functional requirements catalogue; will require a degree of flexibility as the requirements placed upon the smart metering solution may develop as smart grid requirements emerge. Our comments regarding the functional catalogue are expanded below.

Modular WAN

The modular WAN provides greater flexibility to replace the communications module if a benefits case emerges to support this. However given uncertainty regarding the potential benefits and costs we believe the technology decision is best made by suppliers and their asset managers.

The modular approach provides limited certainty regarding early deployment. The potential need for a second visit to replace WAN modules is not cost effective, increasing the costs of early deployment through increased meter and installation costs. In addition, the potential need for a second visit to replace the WAN module increases the costs of deployment, with revisits further constraining the available workforce during the large scale deployment, thus limiting the business case for early deployment without confidence regarding the WAN solution.

As highlighted we believe this requires; the technical specification to confirm the communications technologies the DCC⁵ will adopt; or an arrangement to exempt early deployments from the obligation to use the DCC for their service life.

If a modular communications solution is deployed, we believe this will require a relatively skilled worker to exchange the communications module, to ensure safety. Firstly if the communications module is contained within the meter, meter asset providers will require a competent engineer to

⁵ P53 of the “Statement of Design Requirements” implies the technical specification will select the WAN technologies – presumably this will be a range

ensure the asset isn't damaged. The process will require the seals to be broken, the device exchanged, and re-linked to the DCC, prior to a safety inspection, this should not be assumed to be a low cost activity. In addition the overhead costs of supporting the process are comparable to a normal meter exchange requiring; scheduling and dispatch with appropriate field equipment and travel required. Thus the costs of replacing modules should not be underestimated.

We believe, separating the communications device from the meter will increase both the unit and installation costs, and thus should not be mandated as energy suppliers are better placed to determine the technology solution that meets their requirements. An additional device on the utility side of the meter will have a unit cost in excess of the assumed WAN unit cost of £13 as the device will need to incorporate the appropriate safety, processor and software capabilities normally embedded within the meter, to enable efficient and safe operations. Furthermore complexity will increase the costs of installation if additional wiring or metering repositioning is required, potentially as a result of limited space on electricity backboards, if embedded between the DNO fuse and the meter.

We believe the technology solutions implemented are best selected by energy suppliers and asset providers ensuring they meet the minimum standards required. If a communications hub is mandated and requires installation prior to the electricity meter, this prevents gas suppliers deploying smart metering in advance of an electricity meter being deployed, furthermore if the gas supplier chooses to deploy a standalone gas smart meter they may not require the communications hub. Therefore consideration should be made to ensure they aren't penalised for selecting a technology solution that meets their customer requirements providing it can communicate with the DCC and provides the minimum functionality required.

This output based approach is in keeping with the principles of the Prospectus and the role of Ofgem to be focussed on functionality and not technology.

Standardised HAN

National Grid recognise the potential short term requirement to experiment with a number of HAN technologies to identify suitable technology solutions, as with other early deployments, we believe these solutions should remain in place whilst they provide the required end consumer solutions.

However, potentially aligned with the commencement of the DCC, we believe a HAN standard is required to ensure interoperability regardless of the solutions deployed. Firstly, if the gas and electricity meters are installed separately, without a standardised HAN the meters may not be able to communicate with each other or the IHD. Furthermore multiple HAN technologies will increase the complexity faced by consumers to procure smart appliances that can interface with the metering solution as they emerge in future⁶. This will potentially delay the development of home automation solutions and demand response solutions as incentives to invest or develop smart appliances will be reduced.

We believe, failing to standardise the HAN will increase costs and reduce the benefits of smart meters to consumers, therefore in this instance competition against a pre-determined standard is appropriate.

A standardised HAN is amongst the most important elements for engaging end consumers and enabling additional service developments. It is vital to ensure that there are no barriers to the development of future demand management and optimisation solutions required by consumers in the transition to a low carbon economy across both electricity and gas.

Gas meter specification

The functional requirements catalogue for gas metering contains a number of issues which we believe should be considered.

⁶ A number of white goods manufacturers are developing smart appliances and are awaiting the emergence of HAN standards both in the UK and USA.

The requirement for 15 minute updates to the IHD for gas will significantly constrain the gas smart meter battery life, with potentially limited benefits. Gas consumption is less discretionary than electricity, utilised for space/water heating and cooking, and is potentially more visible through thermostat and water heating controls. Therefore it may be appropriate to enable gas IHD updates based on consumer preferences, as opposed to a mandated 15 minute period.

We believe the 15 year battery life with regards to gas metering as a minimum requirement provides limited benefits. Through extensive battery testing and accelerated asset life testing we remain unconvinced that current battery technologies will support a 15 year life based on 15 minute updates, once ad-hoc communications, valve open/close activities have been incorporated, furthermore, batteries can be exchanged without disrupting supply in the field.

The inclusion of a universal gas valve increases traditional stranding costs associated with the smart metering deployment and potentially increases the associated support required from network businesses. Enabling the use of retrofit solutions during the initial deployment may alleviate these stranding costs and network issues. We are concerned the existing impact assessment potentially underestimates the benefits of retrofit solutions during the initial deployment. Allowing suppliers to choose between a smart gas meter with valve, and a retrofit solution where the asset has a significant residual life (e.g. >10 years) if the supplier believes this will meet the end consumer requirements, may reduce stranding costs and support a cost effective deployment, through improved workforce efficiency.

An approach whereby retrofit solutions are enabled for 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.

Electricity meter specification

We welcome the incorporation of functionality within the electricity meter to support the development of smart grids including measurement of power quality data including voltage and frequency information. This will allow Transmission and Distribution networks to plan and operate their systems efficiently and securely and allow Suppliers, Aggregators and Networks to engage with consumers and offer tariff packages that could integrate time of use pricing, load shifting and demand side response. We have worked with the ENA and Distribution Networks and support their functional requirements.

The incorporation of functionality to enable future load management within the functionality catalogue is welcomed as we believe this capability will support the development of demand side services required by network operators. As highlighted these services may be developed based on sending messages to appliances based on consumer preferences, or alternatively may utilise a secondary circuit within the home used for heating or electric vehicles, potentially providing additional load management services.

The commercial and technical arrangements around demand side services will develop as smart meters are rolled out, smart appliances such as electric vehicles and heating are installed and home automation develops. The volume and sophistication of demand side response will initially be low and will develop over time; smart meter functionality and communication latency and bandwidth therefore need to recognise early and future requirements.

There are principally two services that the System Operator may seek to procure to assist in real time balancing of the system. These are i) reserve; and ii) real time frequency response.

Reserve services could be provided by reducing demand within minutes of signal; for example from 5 minutes to 30 minutes, as described by the ENA. Frequency response services can be provided by reducing or increasing demand within seconds. It is unclear at this stage how real time frequency control services to the System Operator may actually be realised through smart meters however, frequency response services could be achieved by i) remotely setting smart appliances or home automation devices in particular modes of operation; or ii) some could be in response to direct System Operator signals; which will have more onerous communications implications.

We believe the smart meter functional requirements should adopt a pragmatic approach to communications latency and enable the provision of reserve services (as opposed to frequency response services) to the System Operator and constraint management services to Networks. However, we believe the smart meter should be capable of measuring (but not transmitting) frequency every second, which in turn could be used to trigger appliances or home automation systems to provide frequency response services. The communications solution should be sufficiently flexible and extensible to accommodate immediate requirements and migrate to future ones, which could be more onerous, particularly if frequency response services were to develop with direct signals.

Question 7: Do you see any issues with the proposed approach to developing technical specifications for the smart metering system?

The final smart meter specification should be developed as a priority, with significant effort made to achieve a technical specification within 6 months. We believe this should be achievable based on existing industry knowledge, and furthermore may be required to ensure timely development, testing and certification of smart metering solutions through the appropriate MID and RTTE directive approvals process. OnStream's smart meter incorporates the majority of the functionality incorporated within the catalogue, demonstrating the knowledge required to develop the technical specification is available within the industry.

Based on the significant linkage between the smart metering technical specification and the WAN solutions, we believe there should be clear incorporation of the WAN requirements within the technical specification to support the early deployment.

Question 16: Do you have any comments on the proposals for requiring suppliers to deliver the rollout of smart meters (including the use of targets and potential future obligations on local co-ordination)?

National Grid supports the proposal to incorporate interim targets within supplier licences to ensure a timely deployment, and believe the future obligations to support local co-ordination is appropriate.

If suppliers are to achieve the targets outlined within the Prospectus, we believe the existing uncertainty regarding early deployments of smart meters must be removed; attempting to replace the volume of meters required between 2013 and 2017 will be highly challenging and will significantly increase costs.

We believe incorporating a mechanism to enable localised deployment is appropriate, and will be required as smart grid solutions develop during the smart metering deployment, the ability for networks to request installation of smart meters within areas of smart grid development will be required.

Based on the supplier responsibility to deliver the smart metering rollout, and aligned with the Ofgem Review of Current Metering arrangements, we believe the existing Provider of Last Resort obligations with regards to gas metering should be reviewed and the decision made as to whether these are required in the future.

Question 17: Do you have any comments on our implementation strategy? In particular, do you have any comments on the staged approach, with rollout starting before DCC services are available?

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 quicker deployment. This supports the Government's ambition of accelerating the deployment whilst supporting an efficient and cost effective smart metering solution for consumers.

Furthermore, accelerating the deployment of smart meters within the UK represents a significant challenge, and the target of replacing 85% of existing meters with smart meters by 2017⁷ whilst achievable will require greater certainty regarding early deployment of smart meters. If suppliers are required to deploy smart metering prior to the commencement of the DCC, either the technologies the DCC will adopt (e.g. GSM) will need to be confirmed prior to this date, or an exception from the obligation to use the DCC provided. The absence of this could result in negative end consumer impressions through repeat visits.

This will enable suppliers to install smart meters earlier, without facing a significant stranding cost in the event the DCC selects an alternative communications technology. We believe if the staged approach is pursued it is inappropriate that early deployments installed will be subject to stranding as early as 2013, despite potentially providing the majority of functionality required. We believe if encouraging the early deployment of smart meters, the framework should provide some certainty that smart meters installed will remain in place for their expected service life.

Without greater certainty the proposed target of 85% of smart meters deployed by 2017 will be highly challenging, and delaying significant deployments until 2013 as the DCC becomes available will result in the 2017 target either being missed due to workforce constraints, or delivered but at a significantly increased cost borne by end consumers.

We believe if clarification regarding the approach to early deployments is provided this may enable deployment of smart metering solutions based on the staged approach proposed.

Question 18: Do you have any other suggestions on how the rollout could be brought forward? If so, do you have any evidence on how such measures would impact on the time, cost and risk associated with the programme?

National Grid believes accelerating the current deployment proposals from a completed deployment by 2020 to an 85% deployment by 2017 represents a significant challenge, if this is to be achieved stranding issues must be resolved, the technical specification finalised quickly and clarity provided on the DCC technology and framework.

Stranding Issues

The accelerated deployment to replace all meters with smart meters by 2020 results in significant stranding of traditional metering assets as highlighted within the previous impact assessment in December 2009. The proposal that these costs are borne by suppliers or meter asset providers depending upon the commercial or regulatory obligations in place creates investment uncertainty, and costs which will be borne by consumers. Further acceleration of the deployment will increase stranding costs within the industry, increasing investment uncertainty and therefore should be further considered.

⁷ As indicated within the "Smart Metering Implementation Programme: Rollout Strategy" p 44

In addition the existing proposals provide limited investment confidence to support the early deployment of smart meters. Smart meters have an economic life of 10-15 years, however the existing proposals highlight that any smart meters installed prior to the commencement of the DCC will be subject to stranding if the DCC cannot adopt the technology utilised. We believe this uncertainty will delay the accelerated deployment and as highlighted should be resolved either based on an obligation of the DCC to adopt a range of prescribed technologies (e.g. GSM), or through an exemption from the obligation to use the DCC for meters installed prior to commencement providing they continue to meet the suppliers requirements.

Technical Specification

The technical specification must be developed quickly to provide certainty that the assets procured will meet the minimum specification. Continued uncertainty regarding the technical specification, and the risk that assets currently being installed will be stranded if they fail to meet the technical specification, despite providing the majority of the functionality required is delaying the potential for early deployments.

In the event a smart meter is installed prior to confirmation of the DCC technologies, we believe this should continue to be used as a smart meter based on the solution implemented whilst it continues to provide the services required. We do not believe that in instances where the DCC cannot adopt the smart meter solution it should become stranded as a result of the DCC exclusive licence, but rather should be replaced at the end of its service life, or by 2020 to ensure 100% compliance with the DCC in the future.

DCC

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.

Deployment efficiency

We believe the mandate to incorporate a universal gas valve within smart meters, whilst providing greater certainty in future, prevents the use of retrofit solutions in the early stages of deployment. We believe that in instances the gas meter is less than 10 years old and can support a retrofit device, the supplier should be given the choice to deploy retrofit based solutions; if they are confident the end consumer will not require a valve. This provides a number of benefits; firstly the stranding costs are reduced, secondly it may reduce workforce and network constraints arising from accelerated deployment, thirdly as smart meters with a valve are installed following a meter replacement the solution eventually becomes a standard universal valve. Based on these benefits we believe the retrofit solution offers a cost effective approach, which may support the accelerated deployment of smart metering.

Each year National Grid Gas undertakes a large number of network activities that require interruption at the emergency control valve (ECV). We believe it may be beneficial to utilise each of these supply interruptions as an opportunity to install a smart meter thereby avoiding the need for a second interruption on a different occasion, if requested by energy suppliers. The installation job could be undertaken through a commercial arrangement in a similar manner to the existing PEMS contract, whereby the asset is transferred to the supplier's preferred MAP following installation. Whilst remaining a choice for suppliers this may reduce disruption to consumers, reduce workforce constraints and increases the speed and efficiency of deployment.

Question 19: The proposed timeline set out for agreement of the technical specifications is very dependent on industry expertise. Do you think that the technical specifications can be agreed more quickly than the plan currently assumes and, if so, how?

National Grid supports the creation of an expert work group; we believe this should focus on quickly finalising the technical specifications within 6 months. We believe the majority of the technical requirements are already known and understood within the industry and hence this should be accelerated.

We believe in addition to the functional requirements catalogue the technical specification should incorporate; the HAN standard and a range of WAN solutions to be adopted by the DCC. This will deliver greater certainty within the programme supporting the quicker deployment outlined.

We believe our competitive metering business OnStream; having developed a smart electricity and gas meter with the majority of the functionality required can support this process and would welcome further involvement within the expert group.

Question 20: Do you have any comments on our proposed governance and management principles or on how they can best be delivered in the context of this programme?

National Grid believes the approach outlined is broadly appropriate. The programme encompasses a significant amount of change with multiple stakeholders, ensuring the appropriate level of engagement and transparency of progress will be required.

Early determination of the appropriate governance framework and management is vital to ensure the implementation programme is not delayed as a result of administrative process, the timeline to deliver a number of key outcomes will require significant progress in a short period of time and hence a robust governance and management process is required to enable early resolution of any issues.

National Grid Response to questions within “Smart Metering Implementation Programme: Statement of Design Requirements”

Question 1: Should the HAN hardware be exchangeable without the need to exchange the meter?

National Grid believe that as with the modular WAN, a modular HAN selection should not be mandated as a more suitable approach is to allow energy suppliers and their asset managers to determine the appropriate technology solution to meet their customers requirements.

We believe developing a standard for the HAN is more appropriate;

- Provides greater interoperability – to ensure metering solutions gas and electricity can communicate with each other if installed separately;
- Ensures that both metering solutions can communicate with the IHD if installed separately rather than requiring provision of a second IHD;
- Importantly to develop home automation, this could provide certainty to associated technology manufacturers to develop smart appliances, and reduces complexity for consumers in selecting compatible devices, and;
- Provides a standard against which developers can compete and innovate against.

We agree with the statement of design requirements emphasis that the HAN deployed should be backwards compatible (Requirement HA.20) to ensure that as the metering solution progresses and HAN solutions evolve overtime, they will remain compatible with solutions utilised by end consumers.

Whilst a modular HAN provides some future flexibility, as with the modular WAN we believe it increases the costs of the smart metering solution, which would be better resolved based on providing a standard/certainty. Early deployments will potentially incorporate a range of HAN solutions as suppliers test alternative technologies; we believe these solutions should be allowed to remain in place for their service life whilst they deliver the required outcomes.

Incorporating a modular HAN within the minimum specification will increase the costs of the smart metering deployment. The meter unit cost increases as a result of extra components to ensure the modular HAN is isolated from the live circuit, to ensure it can be safely replaced without interruption to supply. Furthermore the modular design increases the risk of tampering.

As with the modular WAN, the business case to replace modular HANs is limited due to the need to re-visit sites to carry out the replacement, incurring cost of a suitably qualified meter worker, schedule and dispatch costs and associated overheads. This may undermine several benefits associated with the deployment of smart meters; e.g. increasing site visits, compromising consumer confidence, reducing interoperability and potentially delaying the development of smart appliances.

Therefore whilst in the short term it may be necessary to trial a range of HAN solutions to identify the best technology solution, we believe a standard HAN should be established due to the benefits outlined, this should potentially be incorporated within the technical specification, or from a prescribed date (potentially aligned with DCC go-live) the agreed HAN standard should be implemented.

Question 2: Are suitable HAN technologies available that meet the functional requirements?

National Grid believes there are HAN technologies available which will meet the majority of the functional requirements, the issues lies with the ability of the HAN technology to function across all premises.

National Grid's commercial metering business OnStream has developed a smart electricity meter and a standalone smart gas meter which uses Zigbee 2.4 as the HAN network. OnStream's smart meters are compliant with the majority of the functional requirements catalogue with a route map for development for full alignment.

National Grid recognises other products in the market will be implementing Zigbee as the HAN network. These solutions will vary by frequency and protocol which may provide different results in terms of suitability within different premises. The key to establishing which one is the most suitable is to encourage trials and early smart deployment. This allows different suppliers and different consumers to experiment with a range of technologies and determine the best available system.

However, we believe it is important for the enduring solution to be based on an agreed standard to support the wider benefits of consumer certainty and enabling innovation and competition against a standard within both meter design and associated technology products. As early experimentation will provide longer term benefits through learning, we believe it appropriate to ensure these assets are not automatically subject to stranding risk once a standard is agreed and hence should be allowed to remain for their economic life, unless a business case or consumer requirement emerges sooner to justify replacement.

Question 3: How can the costs of switching between different mobile networks be minimised particularly in relation to the use of SIM cards and avoiding the need change out SIMs?

National Grid believes requiring SIM cards to be changed, during the expected economic life of the smart metering asset will significantly reduce the benefits of smart metering.

As with any modular based solution, changing the SIM card will require a suitably qualified meter worker to ensure that if the SIM card is changed, it is carried out safely, reconnects to the head-end server and maintains meter integrity.

Whilst exchanging a communications module may improve the technology utilised, improving bandwidth and latency performance for developing future network requirements, changing the SIM card will only be conducted for commercial purposes, we believe the business case to exchange SIM cards is limited due to the cost of associated site visits, therefore the commercial framework should develop an alternative agreement to remove the need to exchange SIM cards.

National Grid's commercial metering business OnStream have attempted to overcome the issues of SIM exchanges through implementation of a 'roaming SIM', following testing this approach is currently being trialled within the field.

The benefits of this approach are that installation success rates are increased as smart meters identify the strongest GSM signal at a particular premise. This reduces disruption to the end consumer as a successful install on the first visit is highly likely. Secondly, in the event of network failure the meter can simply roam to the second strongest network and continue functioning until full network service is restored.

Furthermore in addition to technical efficiencies the solution provides operational benefits as the need to carry multiple sim cards is reduced, and time selecting the strongest network signal is reduced. This network flexibility is particularly important on change of supplier events as a need to change a SIM will undermine the concept of smart metering. There are obviously commercial impacts regarding change of supplier events where the incoming supplier has an agreement with one network provider and the installed meter connects to another network (either through a fixed or roaming SIM). We believe the solutions to this are best considered within the commercial and regulatory frameworks, and in the longer term will need to be considered by the DCC with regards to attempting to change communications providers.

Question 4: Do you believe that the Catalogue is complete and at the required level of detail to develop the technical specification?

National Grid believes the Catalogue of design requirements represents a significant step forward in the development of smart metering within the UK and welcomes the incorporation of the functionality required by energy networks, as we believe this will initially inform the design and development of

smart grids and network planning, whilst in the longer term supporting the development of demand response solutions to improve the efficiency of energy consumption.

We believe the Catalogue of design requirements provides a sufficient level of detail to enable the technical specifications to be developed. We do have some concerns over whether some of the functions listed can be achieved cost effectively, furthermore there is a degree of interaction between the functionalities as a number will be dependant upon the WAN and HAN technologies adopted.

Question 5: Do you agree that the additional functionalities beyond the high-level list of functional requirements are justified on a cost benefit basis?

National Grid believe the high-level list of functional requirements represent significant progress in advancing the final smart metering functional requirements, and welcome the inclusion of the smart grid requirements. Whilst we believe the majority of the functionality prescribed is suitable there are a number of elements we believe require further consideration due to the potential increased cost of the meter or the operating costs within the industry. These are outlined below;

- **OP.3 - “Last Gasp” communications** – We believe dependant upon the communications technology selected the “last gasp” communications functionality increases the meter hardware requirements and hence will increase cost. If the communications solution is ‘always on’ and transmitting, which is dependant on communications type and cost, “last gasp” can be enabled through the smart metering system. However in the instance the smart meter is required to actively transmit a signal based on battery back-up this increases the cost due to the need for an additional battery back-up capacity. The battery back-up is ordinarily limited to that required to transfer data to non-volatile memory, this requires a significantly lower level of battery back-up than is required to transmit a message following a power-outage.
- **ES.10 – “The smart metering system shall support measurement of other power quality data including: voltage, frequency and sag and swell information, harmonic distortion”** – We believe whilst voltage and frequency data can be incorporated within the meter without a significant cost implication, including the additional processing capability required for harmonic distortion will increase the unit cost of the smart meter, with limited benefits from a universal deployment.
- **ES.11 – “The smart metering system shall support capture of consumption information and demand data at 5 second intervals”** – We believe that whilst this may be appropriate in the short term, we believe this should be capable of being adjusted as overtime, the frequency measurement will need to be captured at 1 second intervals to enable automated frequency response, should smart appliances develop to support this functionality.
- **ES.13 – “The smart metering system shall support auxiliary switching and load control commands from remote third parties”** – National Grid welcome this functionality as part of the smart meter specification. It will enable the development of demand response services, based on sending messages to appliances based on consumer preferences, or alternatively may utilise a secondary circuit within the home used for heating or electric vehicles, potentially providing additional load management services.
- **GS.1 – “The smart metering system shall support local storage of calibration data (calorific value, conversion factors, etc.)** – We believe this is an appropriate inclusion as enabling recognition of CV data at a metering level, if provided as a data item by the local network, will enable the development of alternative sources of gas within the UK, such as bio-gas.
- **GS.3 – “The smart metering system shall support at least 48 wake up events per 24 hour period”** – Smart gas meters will be capable of achieving this based on the relevant settings. However, depending on the actions required from these wake up event there will be an impact on the battery life.

- **GS.8 – “The smart metering system shall support 20 valve operations per year within the 15 year battery life requirement”** – We believe mandating a 15 year battery life for the gas meter is inappropriate, as battery life is subject to significant variation based on temperature, number of WAN, HAN, valve operations, to mandate a 15 year battery life will increase the cost of the smart gas meter solution.
- **I.H.2 – “Minimum real time update for electricity is 5 seconds, for gas it is 15 minutes”** – We believe the 15 minute update for gas will significantly impact upon the expected gas smart meter battery life, and should therefore not be mandated without further evidence relating to the benefits.
- **Electricity and Gas services – “Meter Read (Import & Export)”** – We believe the level of granularity within meter reads should be configurable. Time and date based consumption data from smart metering solutions will increase understanding of the dynamics of energy consumption, and provide information to enable improved efficiency within network planning, particularly at a distribution level. Furthermore provision of this data by the smart metering solutions and the DCC will significantly reduce the cost of research and analysis ordinarily undertaken to obtain this data.

Question 6: Is there additional or new evidence that should cause those functional requirements that have been included or omitted to be further considered?

National Grid believes the majority of the additional functional requirements within 3.37 are acceptable, however we believe the “last gasp” functionality and the modular WAN should be reconsidered.

As highlighted above the “last gasp” capability will significantly increase the meter unit cost as a result of requiring a back-up battery in excess of what would ordinarily be required, it may be possible to provide this service through an alternative mechanism provided by the communications network.

As highlighted within our response to the “Ofgem Smart metering implementation programme Prospectus” we do not believe a modular WAN should be mandated as we believe this decision should be made by the energy suppliers and their asset managers providing the technology solution deployed supports the outcomes required by the supplier and the end consumer.

Question 7: Do you agree that the proposed approach to developing technical specifications will deliver the necessary technical certainty and interoperability?

National Grid believe the proposed approach to developing the technical specifications will deliver the necessary technical certainty, however the level of interoperability will be dependant upon the commercial frameworks, and further more will be dependant upon the technical specification selecting a standard for the HAN.

Whilst the approach to developing technical specifications will cover the necessary technical certainty and interoperability; National Grid believes that the knowledge required to complete the specification largely exists today. The SMDG should push for swift resolution of the technical specification to allow meter design/re-design and certification processes to proceed as soon as possible, ideally within 6 months.

Question 8: Do you agree it is necessary for the programme to facilitate and provide leadership through the specification development process? Is there a need for an obligation on suppliers to co-operate with this process?

National Grid believes option 2: industry drafted, with programme facilitation is the most suitable approach to develop the functional and technical specifications.

We believe Ofgem will be required to provide an appropriate framework and process to ensure elements of the technical specification are quickly agreed within the timeframes proposed. We anticipate suppliers will be willing to co-operate with the process and hence will not require further obligations.

Question 9: Are there any particular technical issues (e.g. associated with the HAN) that could add delay to the timescales?

National Grid believe the technical specification to support the functional requirements should be achievable within the timescale, although uncertainty regarding the HAN standard has the potential to delay agreement.

Ofgem should not prescribe the HAN technology, however they should provide a framework through which the industry can select and agree an appropriate HAN standard for incorporation within the minimum technical specification, and the appropriate protocols.

Question 10: Are there steps that could be taken which would enable the functional requirements and technical specifications to be agreed more quickly than the plan currently assumes?

National Grid believes that the functional requirements are on the critical path, and must be developed and agreed quickly (within 6 months) if the Governments intention of accelerating the smart metering deployment is to be realised.

Finalising the smart metering technical specification should be facilitated by Ofgem to ensure early completion –the knowledge required to complete the specification largely exists and therefore the SMDG should be focused on quickly agreeing the specification.

Delaying confirmation of the final meter specification could significantly delay the smart metering deployment, as following agreement; the appropriate solutions are likely to require certification by the appropriate approval bodies. There is a concern that the resources of approval bodies (such as SGS and SIRA) may not be sufficient to deal with the large amount of certifications requested which may inadvertently result in delays.

National Grid response to questions within “Smart Metering Implementation Programme: Implementation Strategy”

1. Do you have any comments on our proposed governance and management principles or on how they can best be delivered in the context of this programme?

National Grid believes the approach outlined is broadly appropriate. The programme encompasses a significant amount of change with multiple stakeholders, ensuring the appropriate level of engagement and transparency of progress will be required.

Early determination of the appropriate governance framework and management is vital to ensure the implementation programme is not delayed as a result of administrative process, the timeline to deliver a number of key outcomes will require significant progress in a short period of time and hence a robust governance and management process is required to enable early resolution of any issues.

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

National Grid believes the cross-cutting activities identified: promoting consumer engagement, consumer protection, data privacy and security, stakeholder engagement, review of business case and risk management are all very important areas and are appropriate given the scale of the programme.

In addition to these key areas we believe a further cross-cutting activity should be considered with regards to associated energy industry initiatives such as smart grids and micro-generation. Whilst, not delaying progress within the development required for the smart metering deployment we believe consideration of associated programmes should be recognised to ensure the smart metering framework either supports or is flexible to enable amendments in future as the penetration of new technology and commercial solutions emerge.

3. Do you agree with our proposal for a staged approach to implementation, with the mandated rollout of smart meters starting before the mandated use of DCC for the domestic sector?

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 quicker deployment. This supports the Government's ambition of accelerating the deployment whilst supporting an efficient and cost effective smart metering solution for consumers.

Furthermore, accelerating the deployment of smart meters within the UK represents a significant challenge, and the target of replacing 85% of existing meters with smart meters by 2017⁸ whilst achievable will require greater certainty regarding early deployment of smart meters. If suppliers are required to deploy smart metering prior to the commencement of the DCC, either the technologies the DCC will adopt (e.g. GSM) will need to be confirmed prior to this date, or an exception from the obligation to use the DCC provided. The absence of this could result in negative end consumer impressions through repeat visits.

This will enable suppliers to install smart meters earlier, without facing a significant stranding cost in the event the DCC selects an alternative communications technology. We believe if the staged approach is pursued it is inappropriate that early deployments installed will be subject to stranding as early as 2013, despite potentially providing the majority of functionality required. We believe if

⁸ As indicated within the “Smart Metering Implementation Programme: Rollout Strategy” p 44

encouraging the early deployment of smart meters, the framework should provide some certainty that smart meters installed will remain in place for their expected service life.

Without greater certainty the proposed target of 85% of smart meters deployed by 2017 will be highly challenging, and delaying significant deployments until 2013 as the DCC becomes available will result in the 2017 target either being missed due to workforce constraints, or delivered but at a significantly increased cost borne by end consumers.

We believe if clarification regarding the approach to early deployments is provided this may enable deployment of smart metering solutions based on the staged approach proposed.

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

National Grid agrees with the risks identified in terms of interoperability, flexibility of early communications services, and issues regarding transition to the DCC services.

In addition to the risks identified, National Grid believe the staged implementation increases the risks associated with early deployment due to uncertainty regarding the DCC and the current proposals emphasis that early smart metering installations will be subject to stranding if non-compliant with the DCC. This increases a number of risks

- **Consumer confidence** – The purpose of the staged implementation approach is, in part to “draw on the early consumer enthusiasm.” These early adopters will be important to gain early consumer engagement; revisits to replace working smart metering solutions may impact consumer confidence.
- **Achieving ambitious deployment** – Providing early clarity on the meter functionality and transition to the DCC will enable the industry to commence deployment towards the 85% by 2017 target. If assets installed prior to the DCC go-live, cannot be transitioned to the DCC or require replacement, this will make achieving the Governments targets increasingly challenging.
- **Workforce constraints** – The workload required to achieve the Governments targets, indicates a significant risk that there will be a shortfall in skills required to undertake the accelerated deployment of smart meters. Enabling early deployment can ease this constraint, as smart meters installed prior to the DCC go-live can contribute to the Government targets. In addition this supports training and development of the workforce with technical and consumer education skills, preparing the industry for the significant workload post DCC go-live in autumn 2013. Furthermore, enabling the use of retrofit solutions may also reduce workforce constraints.

Providing certainty to the industry regarding the transition to the enduring requirements is vital if the staged approach is to deliver the benefits assumed.

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

National Grid believes accelerating the current deployment proposals from a completed deployment by 2020 to an 85% deployment by 2017 represents a significant challenge, if this is to be achieved stranding issues must be resolved, the technical specification finalised quickly and clarity provided on the DCC technology and framework.

Stranding Issues

The accelerated deployment to replace all meters with smart meters by 2020 results in significant stranding of traditional metering assets as highlighted within the previous impact assessment in

December 2009. The proposal that these costs are borne by suppliers or meter asset providers depending upon the commercial or regulatory obligations in place creates investment uncertainty, and costs which will be borne by consumers. Further acceleration of the deployment will increase stranding costs within the industry, increasing investment uncertainty and therefore should be further considered.

In addition the existing proposals provide limited investment confidence to support the early deployment of smart meters. Smart meters have an economic life of 10-15 years, however the existing proposals highlight that any smart meters installed prior to the commencement of the DCC will be subject to stranding if the DCC cannot adopt the technology utilised. We believe this uncertainty will delay the accelerated deployment and as highlighted should be resolved either based on an obligation of the DCC to adopt a range of prescribed technologies (e.g. GSM), or through an exemption from the obligation to use the DCC for meters installed prior to commencement providing they continue to meet the suppliers requirements.

Technical Specification

The technical specification must be developed quickly to provide certainty that the assets procured will meet the minimum specification. Continued uncertainty regarding the technical specification, and the risk that assets currently being installed will be stranded if they fail to meet the technical specification, despite providing the majority of the functionality required is delaying the potential for early deployments.

In the event a smart meter is installed prior to confirmation of the DCC technologies, we believe this should continue to be used as a smart meter based on the solution implemented whilst it continues to provide the services required. We do not believe that in instances where the DCC cannot adopt the smart meter solution it should become stranded as a result of the DCC exclusive licence, but rather should be replaced at the end of its service life, or by 2020 to ensure 100% compliance with the DCC in the future.

DCC

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.

Deployment efficiency

We believe the mandate to incorporate a universal gas valve within smart meters, whilst providing greater certainty in future, prevents the use of retrofit solutions in the early stages of deployment. We believe that in instances the gas meter is less than 10 years old and can support a retrofit device, the supplier should be given the choice to deploy retrofit based solutions; if they are confident the end consumer will not require a valve. This provides a number of benefits; firstly the stranding costs are reduced, secondly it may reduce workforce and network constraints arising from accelerated deployment, thirdly as smart meters with a valve are installed following a meter replacement the solution eventually becomes a standard universal valve. Based on these benefits we believe the retrofit solution offers a cost effective approach, which may support the accelerated deployment of smart metering.

Each year National Grid Gas undertakes a large number of network activities that require interruption at the emergency control valve (ECV). We believe it may be beneficial to utilise each of these supply

interruptions as an opportunity to install a smart meter thereby avoiding the need for a second interruption on a different occasion, if requested by energy suppliers. The installation job could be undertaken through a commercial arrangement in a similar manner to the existing PEMS contract, whereby the asset is transferred to the supplier's preferred MAP following installation. Whilst remaining a choice for suppliers this may reduce disruption to consumers, reduce workforce constraints and increases the speed and efficiency of deployment.

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

National Grid believes this timeframe is appropriate, provided the relevant stages and clarity regarding the transition to the DCC has been provided prior to the supplier licence obligation taking effect.

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

National Grid believes the high level activities, assumptions and timings are appropriate, however we believe there is a significant dependence between the meter specification and the communications solutions implemented which should be clearly identified as a dependency and risk to delivery.

The dependency between the meter specification and the communications solutions must be incorporated to ensure suppliers have certainty prior to the mandated installation of smart meters that smart meters will not be stranded as a result of the DCC go-live.

8. Do you have any comments on the outputs identified for each of the phases of the programme?

National Grid believes the high level outputs identified for each of the phases of the programme are broadly appropriate; however the outputs must incorporate an appropriate framework to enable the transition from the early deployment communications solutions to those supported by the DCC.

National Grid response to questions within “Smart Metering Implementation Programme: Roll Out Strategy”

Question 1: Do you believe that the proposed approach provides the right balance between supplier certainty and flexibility to ensure the successful rollout of smart meters? If not, how should this balance be addressed?

National Grid believes the proposed approach is appropriate. The solution to roll out smart meters must provide national coverage as existing workloads (faults, recert/policy jobs) and consumer demand for smart metering solutions are likely to require smart metering solutions to be delivered nation wide following the licence requirement to install smart meters.

We believe incorporating flexibility within the commercial and regulatory frameworks to enable localised deployment of smart meters is appropriate. These requirements will potentially be limited to trials in the short term, but longer term will support the concentrated deployment of smart meters to support load management in areas experiencing a significant increase in the penetration of distributed generation or uptake electric vehicles.

Question 2: Would the same approach be appropriate for the non-domestic sector as for the domestic sector?

National Grid believes the proposed approach is equally applicable to the non-domestic sector.

Question 3: Is there a case for special arrangements for smaller suppliers?

Smaller suppliers have demonstrated commitment to smart metering with a number already adopting and advocating smart meters. Small suppliers may potentially embrace the additional requirements; however it appears appropriate to consider the potential impacts on small suppliers.

Smaller suppliers are less able to bear significant asset risk, whilst focusing on deployment of smart meters due to the benefits for their business and consumers. The existing level of risk relating to smart metering deployments and the transition to the DCC may be unacceptable to smaller suppliers, therefore separate arrangements may be appropriate, to support smaller suppliers and new entrants, however solving the underlying issues for all suppliers is the most appropriate approach.

Question 4: What is the best way to promote consumer engagement in smart metering? As part of broader efforts, do you believe that a national awareness campaign should be established for smart metering? If so, what do you believe should be its scope and what would be the best way to deliver it?

Consumer engagement will be required to ensure all consumers understand the benefits of smart metering, we believe a national awareness campaign can support this.

Energy suppliers have a number of ongoing communications channels that could be utilised to engage consumers. A code of conduct may therefore ensure consistent messages are provided regarding the benefits of smart metering. In addition to any individual energy supplier marketing an independent campaign; potentially incorporating Consumer Focus, and Age UK, local authorities may enable advice to be delivered by trusted independent organisations.

A national campaign incorporating mass advertising would be beneficial. However, it is also important to engage directly with local community groups, councils, neighbourhoods to enhance consumer engagement.

Alongside the benefits of smart metering, the national campaign could incorporate key safety messages, outlining what to expect during the installation process and the importance of requesting to see identification prior to the meter exchange.

Question 5: How should a code of practice on providing customer information and support be developed and what mechanisms should be in place for updating it over time?

Many of the aspects listed within the proposed code of practice (e.g. meter validation, hygiene factors and providing information at the point of installation) are standard elements of the meter installation process traditionally carried out.

National Grid welcomes the concept of a code of practice to standardise the consumer experience across the industry, and believe independent audits would ensure the code of practice is maintained and remains appropriate.

Question 6: Do you agree with the proposed obligation on suppliers to take all reasonable steps to install smart meters for their customers? How should a completed installation be defined?

National Grid agrees that suppliers should take all reasonable steps to install smart meters for their customers.

We believe in a number of instances networks will be required to support these reasonable steps, in the event the site is unsafe, or meters require significant relocation, network support will be required to support the deployment. This will require appropriate arrangements to be determined to ensure networks are financed to support the deployment.

A completed installation should be defined as a minimum specification smart meter and IHD installed and established connection via the WAN to the head-end server. It should be a part of the completion criteria that the meter worker has explained the benefits to the consumer and provided reference points for additional information. Where the installation process links a new smart metering device to an existing smart metering system, the completion process should include a check to ensure the entire smart metering system remains operational. This will require the appropriate roles and responsibilities to be defined within the commercial and regulatory frameworks.

Question 7: Do you think that there is a need for interim targets and, if so, at what frequency should they be set?

National Grid believes that interim targets are required to ensure the smooth deployment of smart metering within the planned timescales. The targets will provide greater clarity to inform workforce planning and training requirements, whilst further informing the DCC of scale of the communications required.

We believe interim targets based on an annual frequency are appropriate as this provides sufficient flexibility to manage resource allocation throughout the year.

Question 8: Do you have any views on the form these targets should take and whether they should apply to all suppliers?

National Grid believes a targeted percentage of the overall supplier's portfolio is appropriate to measure progress. We recognise this may vary due to change of supplier events, with different impacts upon large and small suppliers requiring an element of flexibility.

Question 9: What rate of installation of smart meters is achievable and what implications would this have?

The current proposals to deploy smart metering represent a significant increase in the rate of installations required within the industry; further acceleration will increase the scale of the impacts.

Firstly traditional meter asset stranding costs will increase as a result of accelerating the deployment,

this has been outlined within our response to the Smart Metering Implementation Programme Prospectus.

Secondly, accelerating the deployment increases the operational risks associated with the roll-out of smart metering, these are briefly outlined below;

- **Workforce constraints** –accelerating deployment increases the size of the meter workforce required and the associated training requirements; technical installation processes, communications binding, customer service and safety inspections. The level of training, and impact on existing meter workers will depend on whether an additional modular WAN requires installation. In addition, further acceleration will increase the size of the workforce required, but reduce the period for which it is required. Post deployment the size of the workforce required will decrease significantly, depending on the replacement cycle, this may drive a cyclical requirement to up and down scale the number of meter workers within the market.
- **Meter worker constraints** – The significant volume of exchanges required will increase the pressure on meter workers to complete installation visits. There is a balance between efficient installations, time spent with consumers, resolution of associated issues and safety. Requiring a significantly increased rate of installation could place additional emphasis on simply replacing the existing meter, reducing focus on other important aspects of the installation process.
- **Network constraints** – increasing the rate of installations will increase the associated support required from both electricity and gas networks where sites require network related activities to enable the installation of a smart meter, in each instance this support will require appropriate financing.

The exact implications of further accelerating the deployment will be dependant upon the solutions deployed and the installation code of practice developed, as this will influence the level of engagement with end consumers, the processes for resolving difficult to install sites, and the technology solution.

We believe that if an accelerated deployment is pursued the framework must enable this to be conducted efficiently with minimal cost and disruptive impacts borne by consumers, we believe enabling the use of retrofit solutions can reduce these constraints and provide cost effective solutions to consumers.

Question 10: Do you have any evidence to show that there are benefits or challenges in prioritising particular consumer groups or meter types?

National Grid believes suppliers will be better placed to provide evidence regarding the benefits of targeting particular consumer groups, we believe during the deployment targeting traditional meters, prior to displacing smart meters installed that are not compliant with the final specification provides a sensible approach.

Question 11: Do you agree with our proposed approach to requiring suppliers to report on progress with the smart meter rollout? What information should suppliers be obliged to report and how frequently?

National Grid believes the proposed approach is appropriate, with suppliers reporting the progress against smart metering targets on a quarterly basis.

Question 12: Do you agree that there is already adequate protection in place dealing with onsite security or are there specific aspects that are not adequately addressed?

National Grid believes the existing standards of protection are adequate for onsite security, including; “fit and proper” installers, visible identification and the use of passwords for vulnerable customers.

We believe the national awareness campaign supporting the deployment of smart meters could be utilised to inform consumers of what to expect during the meter exchange process and provide supporting information regarding security.

Question 13: Do you agree with our proposal to require suppliers to develop a code of practice around the installation process? Are there any other aspects that should be included in this code of practice?

National Grid welcomes the recognition of the required support from networks to support the deployment of smart metering and believe the approach to engage the relevant stakeholders to determine suitable solutions is appropriate.

Furthermore, National Grid believes the development of a code of practice regarding the installation process is appropriate to support a consistent experience regarding the smart metering deployment process. We believe both meter asset providers/meter asset managers have significant experience and should be involved within the development of the code of practice as elements reflect existing practices.