



# **Smart Metering Prospectus**

## **Regulatory and Commercial Framework**

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**Q1. Have we identified all of the key elements that you would expect to see as part of the Smart Metering Regulatory Regime? (Page 12, section 2.13)**

- Yes, at a high level
- There are key lower level elements that are important

This programme has exceptional reach and there are areas in which many players will be unfamiliar, such as telecommunication regulations, or in which expertise is not widespread, such as technical standards. There may be things that we don't know that we don't know.

Existing organisations and governance – Over the period of privatisation, liberalisation, and market change in the form of Pool/NETA/BETTA, the industry players and Regulator set up a number of bodies to contend with the industry arrangements and governance of the codes. Examples are the Master Registration Agreement Service Company (MRASCO), the Data Transfer Network (DTN), and the Performance Assurance Board (PAB) of the Balancing and Settlements (BSC) Code. Whilst they operate largely at a level of detail below that documented by the Prospectus, they do keep the wheels of the industry turning. Whilst the combined arrangement across gas and power is somewhat of a patchwork quilt, the organisations themselves are fit for purpose, and can adapt to new functions whilst managing the (long) period where the old arrangements will need to manage legacy activities. We believe that it is important not to forget that there is an array of existing governance activity, and that it plays an important role. We note also that these arrangements also support the legacy traditional meters and the customers that are not subject to the mandate. Industrial and Commercial players in particular rely on these processes and may strongly resist changes that they may need to make but which bring them no benefit. There are lessons to be learned here from the change to gas registration systems following the Revised Gas Metering Arrangements.

Differences between gas and power – the market arrangements between gas and power differ to a great degree. We strongly believe in retaining only differences that are necessary for the future rather than continuation of legacy. This will add elements to the programme, such as the formal accreditation process for gas metering agents.

Distribution Codes – Smart should be recognised in the development of the Distribution and Connection Use of System Agreement (DCUSA), the Distribution Code, and the gas Network Codes.

Smart Energy Code (SEC) – The transition towards this, the “handshakes” between this and existing codes, and the full coverage of all relevant activities need carefully to be reviewed. We believe that the administration and management of the SEC should be separate from the DCC.

**Q2. Do you agree with the proposal to establish a Smart Energy Code? (Page 18, section 3.6)**

- Yes, strongly
- We think that its consideration and development should be accelerated
- We believe that activity relating to the Smart Energy Code now should consider the variety of new requirements on the industry



Setting up the activity – There are vital changes happening now (see Q3 below) that could be disconnected from smart if they are not “joined up” now. We support an early set up of an activity that scopes the code and either places the activity elsewhere or conducts it, under proper governance.

**Q3. Do you have any comments on the indicative table of contents for the Smart Energy Code as set out in Appendix 3? (Page 19, section 3.12)**

- Yes, as a minimum

Future changes – we believe that at this stage, the consideration of the Smart Energy Code should be drawn very broad and encompass current and future change. Some examples are below.

EU Third Package - The activity could consider the implementation of the EU Third Energy Package requirement for three week change in supply (after a 14 day period, for “cooling off” in the domestic sector), in the gas and electricity and domestic and business sectors. Smart will enable considerable improvement in the speed and reliability of change of supply, as registration can be more automated and immediate, meter reads more reliable, billing and debt issues resolved. Considerations for the implementation of the Third Package have included cancellation/reversal of half completed registrations and the process details need to be considered for smart-to-smart change of supplier.

Feed in Tariff – Over time, the household and market arrangements for import and export for households benefiting from the Feed in Tariff should be harmonised. Smart can provide the functionality and this may need to be scoped now.

Green Deal - The Green Deal is very likely to be very closely tied to the consumer’s meter and hence, at the very least, the prospective arrangements for Green Deal and Smart should recognise one another. It seems likely that the DCC could/should be used for registration of installations delivered under the Green Deal.

Renewable Heat Incentive – Whilst this consideration is in its infancy, the arrangements should at the very least not be incompatible with smart.

Interim – The Smart Energy Code activity could be used as a forum for consideration of industry arrangements in the interim period before smart go-live. An example might be agent accreditation in gas. We would need to carefully assess the impact this would have on implementation timescales. Interim and enduring arrangements will need to be clearly distinguished.

**Q4. Do you have any comments on the most appropriate governance arrangements for the Smart Energy Code? (Page 19, section 3.12)**

- We do not believe that its governance should be within the DCC
- We believe that existing institutions should be used and adapted

Convergence of gas and power – There is little formal connection between the governance of gas with the Joint Office and the Uniform Network Code, and electricity with the Master Registration Agreement, and its service company, managed by Gemserv. We believe that the governance should be united, ideally under one organisation in the long term. In the short



term, if (as we expect) the DCC is to encompass registrations of both fuels, then early close cooperation between the gas and power governance bodies will be required.

**Q5. Do you agree with the proposals concerning the roles and obligations of suppliers in relation to the WAN communications module? (Page 22, section 4.10)**

- No
- Energy suppliers are not telecommunications experts
- WAN modules have the financial features of regulated assets

Configuration – It seems likely that there will be a number of meter/WAN configurations. For example; i) gas and electricity meters both have embedded WAN modules, ii) electricity meters have WAN modules and the gas meter “hops” to the electricity meter with the HAN (a model we do not support), iii) both meters communicate with the WAN module via the HAN. The regulatory regime will need to contend with different configurations, which may often be required due to the local topography of homes...

Ownership - WAN modules are capital assets that should remain in situ. Their capitalisation would be done most efficiently (and therefore cost effectively for consumers) by organisations whose equity investors and debt providers are familiar with the business model of regulatory asset bases. The DNO and DCC are examples of such bodies.

Rental – There is likely to be considerably less differentiation in WAN modules from the minimum specification than in meters or IHDs. Accordingly, it seems likely that rental may benefit from price regulation/oversight.

Maintenance – If there is a standalone WAN box then we believe that the DCC should ideally be responsible for its maintenance. It may be that the DCC then procures maintenance contracts by agents (the procurement should be by open tender). This “DCC Hub” model is then similar to the Supplier Hub model for meters. This model significantly reduces the complexity of the Lead Supplier concept. We do recognise that WAN maintenance presents significant challenges, particularly if (as we expect) it will be mains powered and thence there are rules about where it is powered from (e.g. upstream of the fuse and therefore in the distribution network, between fuse and meter, or downstream of the meter and therefore having no mains power when the mains power is down). We note that the Prospectus implies WAN connection upstream of the fuse.

Lead supplier – Whilst we do recognise the validity of the process that led to the concept of lead supplier, we believe that the solution for how to maintain functionality for a residence with two suppliers, needs further consideration. Beyond the actual initial installation, the lead supplier concept represents a level of cost and complexity that is unwieldy. It would have significant impact on the change of supplier process and on customer experience in the event that there is a problem with the communications. Consider the situation where the lead supplier is the electricity supplier and there is a communications problem at the meter. Under the lead supplier rule, the electricity supplier must arrange for the problem to be resolved. If this requires a site visit then the electricity supplier’s agent can attend the property and work on the WAN module and the electricity meter. However, if the problem turns out to be with the gas meter, the field operative may not be authorised to work on it. Therefore, not only is a further visit to the property required by the appointed agent of the gas supplier, it has placed an obligation on the electricity supplier that cannot be fulfilled.



Possible options – we do recognise the validity of the arguments that indicate a lead supplier approach in maintenance. We believe that clear accountability for maintenance and ownership sitting with the DCC or DNO would remove the need for Lead Supplier as an enduring role.

**Q6. 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. (Page 24, section 4.15)**

- Trials indicate that consumers are most interested in information about consumption and costs
- As indicated by the question, different IHD information requires different HAN functionality

Immediacy of information – The information that is required to be most immediate is that of instantaneous electricity consumption. It is our best understanding that reducing the response time, in seconds, from electrical appliance switching, to observe the change in IHD display, presents challenges to the meter, not the HAN.

Money information – We recognise the benefits of having the ability to transmit information about money between IHD, meter, and DCC. There are varying degrees of security; the cost of recent consumption has limited privacy or security implications and a money transfer password has very high security implications. The security of the HAN will need to reflect the security requirement of the money message.

Calorific value – Gas meters measure volumes, and the calorific value is received by the supplier in arrears to calculate the bill. We note that given the existing accuracy limits of meters (the requirements being +/-2%) that frequent updating of calorific value gives little real benefit.

Historical information – The download of long periods of half-hourly data for example, may be restricted by the HAN latency. We believe that the requirements for large datasets needs further consideration. For example, they could be sent piecemeal to the IHD and then stored on it (this is not in the minimum IHD specification), or the IHD could request a large dataset from the meter (which may even need to get it from the DCC). This consideration will show the requirements of the HAN. Our trials to date indicate that most consumers are more interested in aggregate “rolled-up” information on cumulative consumption, rather than in-day detail. It is hard to guess the extent to which consumers will wish to analyse their half-hourly data in the next few years, although we do expect a year on year increase in demand for this in the foreseeable future.

Prepayment – Prepayment/pay-as-you-go has particular requirements. Whilst all functions could conceivably be performed at the meter (if it has a display), we would expect suppliers to develop solutions whereby the consumer sees information such as debt and available credit on the IHD. Similarly, we expect that if IHD-to-meter communications were not prescribed for security reasons, then suppliers would develop solutions for money messages to reach the supplier from the IHD via the HAN. PPM solutions that involve the IHD will require robust solutions to ensure the operation of the IHD beyond the warranty period.

Prices and current tariffs – We do expect the IHD to increase in relative importance as a communication vehicle, particularly in relation to hard copy by post. The IHD is more interactive and considerably greener. It may be that communication by IHD is regarded by the Regulator as a suitable alternative to surface mail, for the communication of information



such as tariff change. This would certainly help in keeping the IHD in a visible position. We expect ongoing dialogue with the regulator and consumer groups on this point.

Other information – other information such as time, temperature, carbon dioxide emissions and others, do require specification for IHD, meter, and DCC, but do not appear to us to have particular requirements on the HAN. It is possible that there will develop consumer demand for information that requires data-rich flows. It is too early to envisage this in detail and we do not know at this point, the extent to which consumers will wish to use the IHD for sophisticated analysis or if they will prefer (and be allowed) to download information to computers/phones, etc..

Failure – There are different ways in which communications can fail. Each failure mode requires a careful walk through to investigate possible consumer harm. Some of these will entail particular HAN or backup requirements.

Wider uses of the HAN – The HAN has potentially wider use, for example as a WAN, for meter diagnostics, for information other than through the DCC, and for information about microgen.

**Q7. 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? (Page 27, section 4.27)**

- We believe in the DCC taking on all appropriate responsibilities
- We believe in the minimum sharing possible between suppliers

WAN in meter- With the WAN in the meter, then the communication is “point to point” and not shared. There are also fewer interfaces and therefore less room for inability to diagnose the point of failure.

One HAN – The HAN is virtual. So two meters will both send signals and the common protocol constitutes the HAN. The electricity meter will (in almost all cases!) for the near future be the dominant HAN, as these may be residences/solutions where the gas meter hops to the electricity meter for both HAN and WAN communications (we do not support this model).

HAN development – Such is the pace of development in telecommunications, that not only will new and better media and protocols develop, but old ones will become unsupported (this has been a concern for SMS and even GPRS). Such development may mean that when a meter is exchanged that the new meter becomes the dominant one for the HAN and that backwards compatibility is required with the previous lead meter. Such considerations need to be worked through for shared infrastructure.

HAN module – We note the suggestion of a separate HAN module. We do understand the drivers for such a module, for example in a home hub with device control. However, we do not believe that such a module should form any part of smart meter design at this point. It would be a device that “hangs off” the metering HAN, rather than one to which the metering HAN should conform.





Supplier Hub – The Supplier Hub industry model creates clarity for the consumer, who is quite clear that it is their supplier of each fuel that is responsible for the great majority of energy issues (bill, meter, etc.). Whilst some sharing of infrastructure is inevitable for managing two fuels with one communication system, we believe that there should be the minimum possible confusion as to responsibility.

HAN chip and device owner – Clearly the supplier of the relevant fuel must, as an absolute minimum, be responsible for everything “behind the glass”. It also seems important that they should be responsible for the total functioning of the meter, including for example the HAN chip, maintaining the signal strength, even if the meter is modular.

**Q8. Are there additional measures that should be put in place to reduce the risks to the programme generated by early movers? (Page 30, section 5.9)**

- Yes – we do not believe that early movers should create de facto standards, if those standards have a material risk of being sub-optimal.

Fully competitive rollout – The decision to have a central communications model rather than a very lightly regulated fully competitive rollout, was made largely on the grounds that a plethora of individual solutions would generate significant interoperability issues and thence dis-service to consumers. There is no strong reason to suppose that the first solution to market is the best one.

Precedent in standards– Early movement has created de facto standards in the past. Examples are the TaleXus prepayment meter platform, and the Commercial Meter Asset Management file formats following the Revised Gas Metering Arrangements.

De facto standards - De facto standards are not a bad thing in their own right and happen anyway through commercial development (the VHS video format being the best known). However, we do believe that the expedience of adoption of a de facto standard should be resisted, if a different standard is better for the long term.

Interim interoperability – We believe that a long period between the date of smart meter mandation and the DCC go live is not in the interests of consumers and has costs that may exceed the benefits preserved by early mandation. We believe that the interim period presents considerable risk to the consumer experience and that measures need to be put in place now to reduce programme risk, and will need to be put in place later, as issues become manifest.

Pre-mandation – We do not believe that innovation should be thwarted or customer choice limited. At the same time, we do not believe that any consumer with an early smart meter should be “locked in” to a supplier. This protection requires some basic existing measures, such as requiring any meter to be fully operable in “dumb” mode. There are risks to consumers of smart meters being installed now that will require replacement later for reasons of inoperability with the new regulations. Whilst suppliers are clearly incentivised to reduce their stranding risk, we believe that additional regulatory oversight is required to ensure that the potential consumer harm from a large scale mandatory smart meter replacement is not such that a de facto solution is maintained for expedience.

Prepayment – It will be important for consumers to be able to switch between credit and prepayment mode and for this to be done remotely. Prepayment functionality could be



effected in a number of ways and early rollout solutions should not excessively reduce the future capability of the metering system to operate in prepayment mode.

Spring package – The Spring 2011 package of regulatory measures is likely to encompass consumer protections relating to prepayment and relating to disconnection. We believe that these protections should be anticipated now.

**Q9. What is needed to help ensure commercial interoperability? (Page 31, section 5.16)**

- Implementations of lessons learned from the Review of Metering Arrangements (ROMA)

The Review of Metering Arrangements (ROMA) – We welcomed the ROMA, and support its continued activity, as well as the utilisation of Review of Gas/Electricity Metering Arrangements (RGMA/REMA) lessons learned in the consideration of Smart.

Regulatory oversight – We believe that regulatory oversight of Meter Asset Provider (MAP) rentals will be required, if not actual regulation of rental. This is because we expect a potentially considerable range in meter costs from the minimum specification upwards. The rental may be based on the minimum specification and the gaining supplier may use some higher functionality. Whilst it may indeed be possible to have a framework commercial template (similar to the schedules in finance of the International Swap Dealers Association) this may itself require oversight. For further details on our opinions here, please refer to our response to the ROMA.

Interim Interoperability period – In this period, the commercial implications are significant, depending on the option chosen for interim arrangements. The options being assessed range from establishing a central service provider to manage basic access controls and security; through to each supplier making their own arrangements and possibly entering into churn agreements with other suppliers or their agents. Regulatory oversight will be needed to ensure that, whatever option is finally selected, the arrangements are available to all suppliers on a fair and equitable basis and that no one industry player can prejudice the arrangements.

Gas – The current commercial and agent arrangements in gas metering are not fit for purpose, even for traditional meters. These can be reviewed in the context of ROMA.

**Q10. 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? (Page 32, section 5.24)**

- Yes

Mandatory technical assurance - We support mandatory technical assurance for smart meters, rather than the self certification arrangements that currently exist. Given the emphasis throughout the Prospectus on security and privacy, we believe that a more rigorous approach is needed.

Interim – Technical assurance should be applied also in the interim period





**Q11. Are there any other regulatory and commercial issues that the programme should be addressing? (Page 32, section 5.24)**

- We believe that the Review of Metering Arrangements (ROMA) should pick up as much as possible here

ROMA – The smart programme is large and needs to devolve activity where possible. The ROMA generated a large number of metering issues that need to be worked through and which can be done in the context of traditional meters and in the light of experience. Issues include Meter Asset Management unbundling in gas, provision of emergency services, meter provision/operation of last resort, emergency services, data flow, format and management, asset registers, and regulatory oversight.

Stranding – The arrangements for managing the stranding risk of legacy meters are generally unsatisfactory, represent more cost than is necessary, and may not fairly be distributed.

Non-smart issues – Smart meter installation will necessitate the solution of legacy issues such as the presence of asbestos, and non standard meter boards. The costs could be significant and the best approach needs further consideration.

**Q12. 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? (Page 37, section 6.17)**

- The term Time-of-Use (TOU) is used broadly
- Time-of-Use applies largely to electricity
- Early attention in smart is likely to be in gas
- We believe that in the long term, time-of-use tariffs form a (if not *the*) vital element in energy policy
- Half hourly settlement is required to maintain true cost reflectivity and flexibility

Temporal resolution – One aspect of TOU is the temporal resolution (seasonal, daily, day/night, half-hourly, etc.)

Dynamism of tariff – The other key aspect of TOU is in the frequency at which the tariff can change, or (equivalently) the temporal resolution of the index against which it may be pegged (such as the daily wholesale price).

Combination – There are many combinations of temporal resolution of dynamism. Approximate extremes are a half-hourly tariff that is re-indexed daily and a standard one-rate tariff that changes occasionally.

Control of demand, standard resolution – Tariffs involving remote control of energy exist now (dynamic teleswitching). We expect these tariffs/interactions to develop. More importantly, we expect the suppliers to be able to provide a dynamic high resolution strong price signal to consumers, which the consumers then use to drive appliance control according to their preferred configuration. We expect innovation here from device manufacturers.

Control of demand, high resolution and ancillary services – Consumers can provide ancillary services, such as frequency response, or possibly voltage services, that the suppliers can



package and sell on to the networks. Various options are possible and not all services (e.g. frequency response) will be measured / measurable at smart meters.

The need for a strong price signal – For the consumer to benefit from the provision of services that benefit the system, the consumer requires a commercial incentive, which means that the supplier must be able to transmit a wholesale signal to a retail price. Whilst the Great Britain market currently has the potential to do this, there are some risks that market reform may disable this capability. For example the Short Term Operating Reserve (STOR) contracts operate well but create a de facto price cap in the balancing mechanism. The existence of a megawatt based capacity mechanism would have a significantly deleterious effect on the consumer benefits of smart metering.

Development - Broadly speaking, we expect use of TOU tariffs to be significant to make a current impact on energy policy goals, to be around 2020. In gas, the main TOU development seems to be in the response of domestic gas heating to extreme wholesale prices in harsh winters of supply disruptions. Technically speaking, these can be achieved as soon as automated meter reading is available (for example a tariff that has a discount in return for a much higher price on, say 10 days per year). However, such would be the misunderstanding and misrepresentation of the benefits of such tariffs, that it seems unlikely at this point that suppliers will develop the capability to support them.

Experience to date - Our TOU trial has shown that it takes some customers a little while to understand how to get the benefit of the tariff. Savings can not be made without changing consumption patterns, which is why TOU may not be suitable for every customer.

Approach to date on TOU – The approach that we took in trials was: i) leave the customer on current tariff immediately following the installation of the smart meter as this gave a period of adjustment to understand the IHD and what it was telling them, ii) collect several months of half hourly data to enable a detailed consumption pattern to be built and understood, iii) offer a simple 3 (4 maximum) rate tariff.

More complex tariffs – Since these are likely to confuse some customers, then one possibility is to have a small number of industry standards. Whilst this may reduce innovation initially, it would have the benefit of simpler industry process and settlements, by the set up of Standard Settlement Configurations.

**Q13. Are there changes to settlement arrangements in the electricity or gas sectors that are needed to realise the benefits of smart metering? (Page 39, section 6.30)**

- Yes but not necessarily immediately
- These should be developed over a long plan period
- Gas and electricity settlements should recognise the benefits of the other

Future development - The industry has started to consider future settlement arrangements in the context of smart metering. We believe there are synergies between gas and electricity settlement processes and aspirations. As such, we would support key principles to be aligned between the two markets, particularly to use the consumption information that smart meters will provide.

Saturation of current systems - The current non-half hourly settlement regime in electricity is reaching saturation point in terms of the number of standing data items available, such as Line Loss Factory Classes, Standard Settlement Configurations and Time Pattern Regimes;



all of these are required to support non-half hourly settlement. We do not believe this regime will support a large quantity and diversity of new products and tariffs in the long term and therefore a different route into settlement is required.

Energy reconciliation - A major consideration for suppliers is the reconciliation of purchases and sales. Smart metering represents an opportunity to offer innovative products and tariffs to residential and business consumers. Settlement must be equally innovative to maintain cost transparency. We believe half hourly electricity settlement and daily gas settlement for all customers is the most appropriate mechanism to achieve this.

Support of innovative tariffs - Products that are better enabled by smart metering, such as time-of-use tariffs, intend to change consumer energy attitudes and encourage load shifting and energy conservation. Such changes in behaviour need to be reflected by settlement regimes to maintain cost stability and prevent increases in market energy error. Half hourly settlement will provide timely visibility of demand changes, enabling more responsive risk management and management of settlement costs.

Lessons from advanced metering - We believe the industry can learn lessons from the Advanced metering market in some aspects of settlement. This work is already under discussion in both electricity and gas. The half hourly (electricity) and daily (gas) arrangements were created to cater for a certain type of user. While we believe these should be preserved for this market, we do not believe they are appropriate for smart; the current mechanisms do not distinguish between consumer types in half hourly or daily settlement. In addition, current half hourly and daily metered arrangements are applied on a site-specific basis; we do not believe this will be appropriate for all UK metering points.

**Q14. 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? (Page 39, section 6.33)**

- The current Independent Gas Transporter metering arrangements are unsatisfactory, even for traditional meters
- All independent network owners should be subject to the same obligations as the larger networks.

The approach with iGTs over the years, who have still not yet adopted RGMA standards, has been to soften their obligations due to their size. This has resulted in onerous manual processes for suppliers, which ultimately impact the customer. This cannot be allowed to continue for smart rollout, especially given the rate at which the numbers of customers on iGT networks is growing.

**Q15. Are there any other industry processes that will be affected by smart metering and which the programme needs to take into account? (Page 40, section 6.35)**

- Yes

Safety inspections – The continuation of the current safety inspection rules would represent a significant cost to the suppliers (and thence consumers), as the need to physically read meters (and inspect them at the same time), disappears. We believe that the future regime for safety inspections should start “bottom up” with the merits of different inspection regimes,



rather than simply assume that the status quo is fit for purpose. We believe in general, that safety inspection en masse is best done remotely using suitable diagnostics.

Calibration and recertification – We recognise that the new functionality of smart meters does not relate in particular to the metrology. We also recognise the jurisdiction of the Measuring Instrument Directive and the change towards in service testing. We believe that the in service testing regime should recognise the regulatory limits for meter accuracy (+/- 2% gas and between -3.5% and + 2.5% for electricity) and not impose costs to suppliers (and therefore consumers) that are out of keeping with the benefits.

Emergency processes – Over the years, suppliers and distribution companies have gradually sorted out how to handle consumer calls that cross their jurisdictions. For example calls to distribution companies about bills and to suppliers about network and meter safety. Broadly speaking we believe that clarity needs to be provided to consumers, to contact distribution companies for safety issues (e.g. smelling gas), and suppliers for billing issues. We also recognise that the distinction between suppliers and distribution companies is not clear to all consumers and that each will need to know how to refer the consumer to the right place. We also recognise that, in “off supply” situations, the consumer may not know the reason for the outage and that (as now) it may relate to distribution fault, meter fault, or PPM issue. The extent to which a supplier should be able to diagnose remotely needs careful consideration, particularly with respect to costs and IT systems.

Meter replacement following emergency callout – The current formal rules and optimal activity in the field are not well compatible, as distribution companies have “make safe” requirements and suppliers have metering requirements from the point of the fuse. The situation could worsen in smart unless attended to, particularly in recognition of the safest and best consumer experience in the field. It is the ideal for a single visit to resolve the problem and to leave the consumer with a working smart meter. In practice this means that it is desirable to test the meter communications at the head end and to register the meter with the DCC.

Tamper/theft management – Theft and tampering is not only illegal and unfair on other consumers, but it is dangerous – especially in gas. There is a wide array of possible tamper/theft detection and alarms and the smart meter design should be in keeping with the costs and benefits case. Broadly speaking, our best view at this point is that tamper/theft detection can best be done by basic functionality at the meter and good functionality to “ping” the meter remotely and test for meter advance. For extra functionality such as bypass detection by voltage drop across the meter, we defer to experts and believe that all functionality should be subject to cost benefit analysis.

