

**RESPONSE TO OFGEM CONSULTATION ON DOMESTIC METERING INNOVATION
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Annex I: SMART METERING COMMON FRAMEWORK

The Common Framework sets out a Code of Practice for Suppliers under the headings of Operational Governance and Commercial Governance. It does not seek to achieve a consensus on product, contractual arrangements or transition periods (unless mandated by GB law).

Its remit covers those areas that require standardisation in order to provide industry governance for the implementation of multi-utility smart metering by Suppliers in GB.

It is important to ensure market interoperability within the context of the potential introduction of new metering technologies. Key to this is ensuring that the customer transfer processes remain robust, and the settlement processes are fair. A key requirement for the customer transfer processes is that sufficient data is exchanged to enable the ongoing management and servicing of the customer. The meter is a key component of this.

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1 OPERATIONAL GOVERNANCE

1.1 Core Meter Functionality

1.1.1 Basic meter functions

Smart meters require three levels of function. The basic function level is common to all meters e.g. the ability to measure consumption. The secondary function level is applicable to all meters but not necessarily activated e.g. slave device additionality. The added value level is not a basic requirement and can include features specific to the supplier e.g. alerts when home energy use reaches a threshold level (see downloadable upgrades).

Central to the requirement to change industry protocols is the additional “core” metering functionality deployed by suppliers. The incoming supplier needs to understand which core functionality is in place so that it can align its processes, business rules systems and potentially contracts accordingly.

The change of supplier flows must contain sufficient information for the incoming supplier to understand the functionality contained within or associated with the meter. The decisions therefore about functionality must be taken before the shape of industry protocols can be developed.

Within this functionality there are two key elements:

New Entities:

These could be for example new devices, which needed recognising in their own right, such as a communications portal. New fields within flows may be required to recognise these devices.

Additional Attributes:

Data attributes and associated business rules would need amendment to recognise the differing capability.

1.1.2 Tariff control

Smart meters require functionality to allow tariffs and prices to be changed remotely. (There are implications for gas flow which cannot be so easily regulated).

1.1.3 Time switches

Functionality e.g. Economy 7, white meter tariffs could be incorporated into the Smart Meter using electronic counters. Setting could be carried out remotely, or configured when commissioned. Real time setting could be provided through remote synchronisation or via the Radio time code.

1.1.4 Embedded generation/microgeneration

Import and export of energy is not a base function because it is dependent on prevailing economics. Unlike electricity it is not feasible for gas flow to be reversed.

1.1.5 Load limiting

Smart meters enable energy flow to be restricted to reduce consumption for vulnerable customers, so that energy was still available for essential needs, but self disconnection was less likely.

1.1.6 Multi-utility solution

The smart meter infrastructure should be able to support other utility provision e.g. water. This would potentially reduce cost and create a hub for measuring utility services.

1.1.7 Safety and tampering

Suppliers and DNO's would agree standards for safety checks and theft detection.

1.1.8 Downloadable upgrades

Smart meters include downloadable upgrades. These would be future proofed e.g. to allow the introduction of half hourly metering.

1.1.9 Protocols

Suppliers will agree protocols with manufacturers to ensure consistency in technology and functionality.

1.2 Meter Processes

1.2.1 Change of Supplier and Use of DTN/IXN

The DTN / IXN will need to be enhanced to support any new / modified flows and facilitate security access for the incoming supplier to the meter, and removal of security access to other suppliers. In addition the previous supplier must be able to remove any functionality and data which will not transfer to the incoming supplier.

Transferring connectivity from one supplier to another would operate as anticipated to be undertaken by CTP, with the DTN flows triggering an automatic closing / opening read upon transfer. An automatic validation of relevant MTD's will be conducted when the new Supplier collects the opening read. This process will be replicated for New Connections, and enhanced for PPM's to address customer payment issues.

1.2.2 Capacity

An important consideration is the capacity of existing industry to cope with additional data throughput. In addition to supplier systems consideration should be given to central settlement systems, in both fuels.

Any decision to "filter" reads entering in to settlement should come under close scrutiny to ensure equitability

1.2.3 Design

The extent to which more radical industry design reform is necessary, can only be assessed after the extent of the functionality deployed is understood.

Additionally thought might be given as to how the availability of more data, especially readings could be used to improve existing industry processes e.g. condense the change of supply timeline.

1.2.4 Dual fuel implications (connectivity to gas)

Dual fuel meters will require the gas meter to be fed through the electricity meter. This would then provide a dual reading in one display. Gas meters are currently powered by a battery, so the technology would continue to be separate. There are a number of significant practical issues around electricity meters being used to collect gas debt, not least how we work out what cash has been collected for which fuel, and how we deal with single fuel cos from a dual fuel starting point.

1.2.5 COP10

Work on COP10 is incomplete, but a degree of standardisation would be required. The Elexon Expert Group could be resurrected.

1.2.6 Unmetered sites

For the avoidance of doubt it is proposed that there should remain a category of electricity service that should not be required to be metered. This will include, for example, supplies to individual street lighting columns, telephone kiosks, traffic lights which have a predictable usage and also small infrequently used supplies such as connections for Christmas lighting or a short duration public event such as a local fair. The cost of new technology metering could be prohibitive in these instances but may not impact on the manner or energy usage of these supplies.

Providing Smart Meters for low consumption sites would appear uneconomic, however, if common points of connection can be metered this would be an option. Sensitivity is both on continued growth in the use of unmetered services, and exclusion of these supplies from any 'Energy Efficiency' initiatives to reduce consumption or manage demand more effectively.

1.2.7 Non-qualifying metered sites

There are a number of small energy using supplies which are currently metered but which will not benefit from the additional functionality of a smart meter. These supplies could retain existing technology metering. A typical example is a small landlord's supply which is required in a block of flats to provide communal lighting and perhaps a power point for ad hoc maintenance activities. A maximum annual usage could be established under this category which provides exemption for the need to install a Smart Meter. However, it is difficult to differentiate between small and large landlord supplies, as seen in London between 2000 unit tower blocks and small houses, and this would complicate any policy. Inevitably, these supplies would need to be metered, due to the risk of fraud, and also to encourage sensitivity to energy management. This is a topic for further discussion and cost analysis.

1.3 Prepayment

See para2.23 in Ofgem paper.

There is an opportunity to rationalise the base type of PPM

1.3.1 Prepayment Meter Types

Prepayment meters are generally more expensive to buy and also require a supporting payment infrastructure. This infrastructure was traditionally delivered via Post Offices but more recently has been supplemented or replaced by local shops recruited by Paypoint or Payzone who create local networks of payment outlets. Local suppliers have an obligation to provide a prepayment meter infrastructure system to all suppliers thereby enabling competition for prepayment customers. The main technologies currently in use in England, Scotland and Wales for electricity are :

1.3.2 Token meters

The least automated type of meter which require visits to recalibrate the meter to obtain a meter reading, and to recalibrate for a price increase or tariff change or to collect an electricity debt. As a consequence there is a substantially greater risk of a customer running up a debt and, as meter reading requires a site visit, bills are far more likely to be estimated than with other technologies again leading to potential payment adequacy issues.

1.3.3 Key and Smart meters

Both of these enable messages to be passed to the customer by an electronic key or smart card respectively via the payment infrastructure. Messages are sent from the supplier's system to the local payment outlet that are updated on the key / card when the customer buys credit. These enable remote recalibration for price / tariff change or for setting up of an agreed debt arrangement. The devices also collect the latest readings so a read is obtained every time the card is charged, typically weekly. Hence there frequent and up to date information is available to enhance usage statements and to keep on top of payment adequacy. More recent key technology includes additional functionality such as the ability to transfer from prepayment to credit without the need for a visit. Any subsequent move back to prepayment does however require a visit. There are also limits to remote tariff change. There therefore remains less automation in prepayment than in credit metering.

1.3.4 The keypad meter

This is being installed in Northern Ireland. This enables purchase of credit from the home but is reliant on a customer having a bank account. It also provides additional functionality including some flexibility on tariffs and availability of historic cost information.

1.3.5 The Quantum meter

This is the single gas prepayment meter currently on circuit. Again there is a payment infrastructure managed centrally by Siemens. This infrastructure again allows for the collection of meter readings on the payment device and transmission to the supplier via the Quantum agency. Rates can also be set remotely although there is a limit to the

number of changes and price ranges that can be set. An enhanced gas prepayment meter is currently being developed which is understood to provide facilities similar to Talexus. There may however be technical limitations in switching remotely between prepayment and credit functionality.

1.3.6 Smart prepayment metering functions

Basic functions:

- Ability to reset the meter without the need for a visit
- Ability to collect meter readings without the need for a visit

All existing meters other than token would therefore meet the minimum criteria.

Enhanced facilities:

New meter fits should provide the enhanced facilities as it becomes reliably available.

- Remote tariff changes
- Remote change between credit and prepay
- Better options for transferring credit payment to meter for prepay
- Remote disconnect /connect

Gas prepayment is very limited, due principally to battery issues. Interchangeable prepayment to credit functionality is also some way off.

1.3.7 Dual Fuel

Draft regulations have been issued by Ofgem to enable the collection of both gas and electricity charges whereby an electricity prepayment meter collects the gas charges. Subject to technical complexity this should provide cost savings and may enable innovation. There are however a number of issues including complexity around dual fuel switching. A supplier who chose to adopt this technology would however want to be protected from a customer deciding to switch supplier or product on a single fuel. This could add restrictions to competition in supply for customers who are often seen as disadvantaged. Latest Ofgem research however does show that 90% of dual fuel customers would switch to a dual fuel product so in practice the impact on competition would not be major.

Explore the option for customers to choose between dual fuel or a less expensive meter.

1.3.8 Maintenance and inspection

The requirements for maintenance and inspection should be governed by a Code of Practice (CoP) as the metrology will still be required to conform to relevant accuracy standards both for Settlement purposes and to ensure that the customer is reassured that he has a reliable measuring device for his energy usage. Smart electricity meters should therefore still either be certified or be approved under appropriate legislation such as the BSC, Electricity Act and Gas Act. The meter will be replaced when identified as faulty or as dictated by the relevant 'in service testing' procedures.

1.3.9 Installation standards

The meter is the channel through which information is passed in order to communicate with the customer. The smart meter display may be a remote reader (slave device) to allow customers to view their energy consumption in the room(s) most commonly occupied. There are implications for retrofitting meters e.g. location of meter where a slave device is not used.

1.3.10 In service testing

The Measuring Instruments Directive provides the framework for establishing an 'In Service Testing' process, which is currently being reviewed by IMAG on behalf of the Industry for both Gas and Electricity.

1.3.11 Rights of access (for installation and site safety visits)

1.4 Settlement

Universal changeover from NHH to half hourly . . .

Currently we have two main mechanisms for settling energy usage for electricity. These are half hourly metered or profiled non half hourly arrangements. Although it is usual for half hourly supplies to have remotely daily read meters and non half hourly meters to be manually read on a quarterly basis this is not mandated. In moving to a scenario where remotely read meters are installed on the majority of domestic services this opens up the possibility of collecting meter readings at a much increased frequency and at intervals of each half hour if required. This may be necessary to enable Suppliers to introduce varying tariff structures to enable them to incentivise customers to optimise their energy usage. The earlier collection of data may also enable central Settlements to reach a final reconciliation at an earlier opportunity than at present. However, the collection, processing and validation of half hour data from many millions of meters will require significant processing capacity and human intervention which will need to be compared with current systems to see if this is likely to achieve a cost effective and viable solution.

If a domestic solution is established then it seems imperative that small and medium sized business premises are also addressed. Otherwise a significant amount of energy will still be metered utilising non Smart techniques which will also limit any rationalisation of the central Settlement systems. Ideally, a solution should be developed whereby either these supplies will be treated the same as domestic supplies with a suitable Smart Meter installed or considered large enough to warrant inclusion within the half hour market. A number of possibilities could be considered, one example being that all CT metered sites are half hourly metered and all single and multiphase whole current supplies are included within the new domestic trading arrangements.

Data management in back office (related to settlement) could be stored, aggregated and cleansed before submitting for settlement.

1.5 Transition

1.5.1 Transition from conventional to smart meter

The features of transition need to be agreed and whatever product is rolled out, the process will be able to be managed. This will be informed by Ofgem and the Energy Review based on customer need and supplier requirements.

1.5.2 Data flow improvements/integrity

Any introduction of Smart Metering should bring the potential for improvements in data integrity across Supplier and agent systems. It is therefore logical to consider, once a meter can be interrogated remotely, how the Data Collector can more effectively update party systems directly ensuring that information is presented both accurately and in a timely manner. At this stage it is recommended that any programme of activity relating to the deployment of Smart Metering recognises the opportunity to gain improvements in data integrity across party systems and encompasses a review of data flow routing.

1.5.3 Optimisation and support of data collection

Data Collection will become a remote activity for the capture of the majority of meter readings as Smart Meters are deployed. There is also the potential for the Data Collection role to include a multi utility service provision gaining readings from gas and water meters as well as electricity meters. There may also be an increasing range of services required to update meter programming and functionality remotely and to collect a wider range of information not relating to billing or Settlement activities such as intruder alarms. There may be benefits in suppliers undertaking such activities or establishing a number of agents who provide such services or there may be opportunities for a combination of both arrangements. New techniques may be deployed to communicate with smart meters such as PLC and it will need to be decided whether DNOs will collect such data for onward transmission to a Data Collector or whether the Data Collector can access such systems directly. Although such service provisions are likely to evolve over time it will be important to establish an initial service offering that will support the introduction of the new technology metering in a cost effective manner.

1.5.4 Need for Non Billing/Settlement data retrieval and storage

Current metering data collection and data storage is predominantly that required for customer billing, Settlement and meter management purposes. As more complex metering becomes available with connectivity to other devices then additional data items will need to be stored and transmitted. Consideration needs to be given as to how future party systems can be configured to both collect, store and forward this information to relevant parties. Examples will be how the electricity meter communicates to other utility meters (wired, radio) and potential slave devices and any additional uses supported by this equipment such as the monitoring of intruder alarms.

1.5.5 Multi-utility solution

This would relate to new build only. Smarter metering could support a multi-utility functionality, but this is not addressed yet in the business case.

1.6 Communications

1.6.1 Power Line Carrier/SMS/GSM

Suppliers must have the option to use any of the agreed communications platforms.

This will require Ofgem/DNOs to consider changes to regulations for the use of PLC. There is no common view on the roll-out.

1.6.2 Protocols

Suppliers will agree the use of non-bespoke providers, which must be compatible with other communication platforms.

2 COMMERCIAL GOVERNANCE

2.1 Rate of change

2.1.1 Stranded assets

SM will minimise future stranding. Suppliers will agree the volume and cost incurred.

2.1.2 Stranded contracts

If a customer chooses not to have SM the contract is stranded. Suppliers will agree that the costs incurred will be met by the supplier that strands the contracted.

2.1.3 Implications of roll-out (phased roll-out or big bang approach)

2.1.4 Cost of transition: Length of roll-out

2.2 Commercial relationships

2.2.1 Commercial MAP agreement

2.2.2 Commercial MAM agreement

2.2.3 Agreement on standard for universal basic functions

Suppliers will subscribe to standards for commercial and contractual agreements.

2.2.4 Agree process for pricing structure

Depending on the roll-out suppliers will agree a pricing structure that would be common to all suppliers/DNO's. This may require Ofgem to consider a licensing regime. This does not mean agreeing a common price but how the price is calculated.

2.2.5 Flow and storage of non-settlement data

There would be a charge for additional data e.g. related to social factors.

2.2.6 Sharing of infrastructure and data

This will allow economies of scale and may result in agreements with DNO's on Power Line Carrier. Agreements will need to be reached with the Meter Asset Provider that meets a minimum specification for change of supplier covering, for example, advances in technology. In the same way Meter Asset Maintainers and data processors will be required to adhere to standard data protocols.

Distributors will need to assess the benefits of import/export agreements and may identify advantage in joint contracts with suppliers. Telecommunications network providers may be engaged in collection of data via GSM and SMS etc.

2.2.7 Support for interval metering

Ofgem will need to investigate pricing flexibility for half hourly metering.

2.2.8 Planning assumptions – infrastructure costs

The ERA notes the Ofgem cost/benefit analysis. We are not offering comments at this stage.

2.2.9 Economies of scale available through manufacturers

This will require further research. IMAG could be tasked with undertaking research through a sub-group of key stakeholders.

2.2.10 Differences in commercial and domestic meter provision

This anomalous group is not currently addressed by SM. Non domestic NHH customers may be brought within the threshold of HH contracts.

There are a number of options, including migrating sub-100kw customers into the mandatory HH market, utilising lower cost metering infrastructure and reduced settlement charges. However caution must be exercised over any commitment to progress HH settlement, or reporting for the mass NHH market. This is due to the significant impact the volume of data would have on industry processes, and the need for substantial data traffic management leading to wholesale change of the Supplier, Agent, Operator and Hub systems, and the need for fundamental re-engineering of the Industry Architecture and Processes.

2.2.11 Functionality benefiting other third parties

Data collected thorough SM technology may be passed on to third parties at a cost, e.g. theft detection for DNO's.

2.2.12 Frequency of billing

Need to consider the impacts upon settlement and what the issues might be arising from any cleansing / filtering - like in equitability of settlement / or risks of in equitability.

2.2.13 Realignment of back office functionality

Suppliers will optimise data collection systems to provide a commercial value to distributors and generators