

POSITION PAPER

"SMART METERING - A RETAIL PERSPECTIVE"

**Eurogas
Supply & Markets Development Committee**

1. Introduction

1.1 Background

Automated meter reading (AMR) and more recently smart metering (which can be defined as a system which provides two-way (or bi-directional) communication with the customer's meter) offer the prospect of radically changing the relationship between the customer and the supplier.

These advanced metering systems, initially considered in electricity but applicable also to gas, can transform metering and billing by eliminating manual meter reading and estimated bills, enabling real-time, accurate billing. They minimise the need to visit customers' premises and may also offer improvements in customer switching and other operational activities. For example two-way communication can assist in the identification of fraud.

The immediate feedback of consumption and other information available from smart meters is widely expected to make customers more aware of their consumption and so encourage energy conservation. In the case of electricity, there is also the possibility of time-of-use tariffs, which can be used to encourage load-shifting to cheaper, off-peak periods.

1.2 Objective of this paper

The benefits and costs of smart metering have to be carefully assessed at Member State level. This paper focuses on the interests of gas suppliers and their customers and reviews a number of issues raised by the advent of smart metering and how smart meters in the residential market may best be facilitated.

Some Member States are more advanced than others – this paper seeks to identify some of the aspects which experience suggests need to be taken into account in considering the implementation of smart meters.

Finally this paper sets out actions by which Eurogas intends to represent the interests of gas suppliers in future developments in this area.

1.3 Other initiatives at EU level

In parallel with this paper, Marcogaz (with Facogaz, which represents gas meter manufacturers) has prepared its own position paper on smart metering. This focuses mainly on the technical and functional aspects of smart metering, with a view to facilitating future standardisation in this area.

There are already task groups working on technical aspects which report into the Gas Meter Technical Committee within CEN (the European Committee for Standardisation). It is desirable to ensure that the perspective of gas suppliers is reflected in any future standardisation work, and together with Marcogaz, Eurogas has been invited to participate as an interested stakeholder in the Smart Meters Co-ordination Group being established by the European Standards Organisations.

2. Deciding to implement smart metering

2.1 Legislation

The Directive on Energy End-use Efficiency and Energy Services already places obligations on Member States to ensure the provision of *'competitively priced individual meters that accurately reflect the final customer's actual energy consumption and that provide information on actual time of use'*. In the case of new connections, such meters are to be provided in all cases, regardless of whether they are cost-effective. In replacement situations such meters are to be provided *'insofar as it is technically possible, financially reasonable and proportionate in relation to potential energy savings'*.

The Directive also requires billing *'where appropriate'* to be based on actual energy consumption, and billing to be carried out *'frequently enough to enable customers to regulate their own energy consumption'*. This wording is now reflected in the Third Package.

Thus the Energy Services Directive does not explicitly refer to two-way (smart) meters. Member States vary in whether they see the directive requiring smart meters to be installed in all new properties and in whether they consider such meters to be cost-effective in replacement situations. The Commission is due to present the state of play on the implementation of the Energy Services Directive to the next Citizens' Energy Forum in autumn 2009.

In addition, the 'Third Energy Package' will require Member States to ensure the implementation of intelligent metering systems (subject to an economic assessment of all the long-term costs and benefits, to be carried out within 3 years of the new directive entering into force).

2.2 Financial justification

Therefore, regardless of how the Energy Services Directive is understood and transposed by Member States, the Third Package will require careful assessment of the cost of replacing current generation conventional meters with more expensive advanced metering solutions and of providing the necessary communications infrastructure, especially if smart meters are to be introduced proactively, before the conventional meter would normally be replaced.

The financial justification for smart meters is likely to vary significantly between Member States, depending on such factors as:

- the nature and cost of the meter reading service currently provided via (manual) metering,
- the age of the present stock of meters,
- the nature and speed of the roll-out programme adopted,
- the typical location of the meter and ease of replacement,
- the amount of energy consumed and the extent of any energy saving among different customer groups as a result of greater energy awareness.

It should be noted that, since smart gas meters are likely to be more expensive than equivalent electricity meters, the business cases for gas and electricity smart meters will be different.

Depending on national circumstances (e.g. the typical location of the meter in the home) some implementation costs may be saved if smart meters for gas and electricity are rolled out in parallel on a geographic basis. However this is not always straightforward. Member States vary in the extent of gas coverage and thus how far most final customers can be considered dual-fuel. They also vary in how far gas and electricity are aligned e.g. whether the same distribution system operator (DSO) has responsibility for gas and electricity meters.

Development of the business case for smart meter roll-out is complicated by the different market models in Europe and by the fact that - particularly in competitive markets - costs and benefits are shared among different players in the energy value chain. There is also the difficulty of reflecting in the business case any societal benefits which are claimed i.e. in terms of CO₂ reduction.

Both the business case and practical considerations are also more complex if it is desired to roll out water metering, in parallel with electricity and gas, although it may be sensible to co-ordinate across all three utilities, at least in terms of technology and communications.

2.3 The role of energy suppliers

In most cases, gas and electricity metering services in Member States are provided by DSOs, but in a few instances – notably Great Britain and The Netherlands – there are models in which suppliers have a more active role in metering issues.

Whatever the market model, all suppliers have a strong interest in the scope, nature and cost of the service to be provided by smart meters, since these determine the metering service and customer propositions available to customers, the tariffs that can be developed on the basis of smart meters and the opportunity for the supplier to introduce new methods of operation.

Importantly they also determine the interface with the supplier's current customer service systems (which will need to be adapted to deal with the greater quantity of metering data), and will affect the costs and charges incurred by the supplier. The introduction of smart meters may also result in far-reaching changes to industry processes such as balancing, and have major implications for a supplier's billing and cash-flow.

Recognising these widespread impacts, the economic case for smart meters must be carefully assessed, considering the costs and benefits throughout the industry chain.

3. Specifying smart meters

3.1 Specification

Before any smart meter roll-out is commenced, a smart meter specification at least at national level is desirable, supported by all the suppliers and DSOs involved. This will have to strike a balance between functionality and cost, and between standardisation and innovation. The aim should be to ensure a common minimum functionality and provide the necessary interoperability, without which the costs of smart meter roll-out and subsequent metering operations will be higher.

For this approach to be successful, the specification should be accompanied by a framework which guarantees compliance by all players.

At EU level, some harmonisation of approaches and technical solutions is also desirable in order to realise economies of scale – see section 4 below.

3.2 Functionality

The basic functionality of the smart metering system chosen is naturally a major concern to all industry players but particularly suppliers. In some cases, Member States have defined some elements of functionality in legislation, at least at a high level, or have placed standard obligations on meter providers (generally DSOs) and this facilitates agreement of a more detailed functional specification. But however the functionality is specified, it is essential that suppliers are fully involved in the detailed specification, since it will determine the services (including types of tariff) able to be offered to the customer, as well as their cost.

The following have typically been included in the list of the more important functional features in relation to gas smart meters:

- on-demand consumption and other information for customers,
- storage of most recent readings in the smart meter memory,
- provision of periodic meter reading information on request by authorised market participant(s),
- remote meter management (meter status, activation/de-activation capability, error messaging, fraud detection),
- remote changes of tariff, and
- in some cases, a pay-as-you-go or prepayment facility (capable of being introduced/activated remotely)

These correspond to the three main areas of additional technical functionality identified by Marcogaz:

- remote index reading, to allow more frequent meter reading
- communication of information to the customer, to assist the customer to manage energy consumption and cost
- additional features to support improved customer management (e.g. switching and prepayment)

This functionality will enable gas and electricity suppliers to offer new services to customers and to improve or transform existing methods of working. Most new services will be applicable to gas and electricity, but some, such as 'time of use' tariffs, are likely to be relevant only to electricity.

3.3 Interoperability

Smart meters have to interface with existing operational and information systems managed by DSOs and suppliers. A critical consideration in the choice of smart metering system is therefore how it communicates externally i.e. interoperability.

From a customer perspective, interoperability means whether customers who switch suppliers or move around the country can still continue to receive the same or similar service; from a supplier perspective, whether the supplier receives consistent dataflows, regardless of which company is operating the smart metering system. Both customers and suppliers will also be interested in local communications capability i.e. if the smart metering installation can be connected to personal computers or other equipment in the home, to enhance the service available.

A major consideration is how metering data and other messages are to be communicated between the meter and the meter operator, since this will be a key element in the infrastructure to support smart metering and may have implications for the services smart metering can provide.

Regardless of the approach to communications, where a national market has a number of distribution areas each with its own DSO, there are significant advantages if the smart metering system adopted is the same or at least compatible throughout the country. Not only are there potential economies of scale for the DSOs, there is then commonality in what suppliers can offer, which assists suppliers operating at national level, so facilitating competition. Thus there should be some standardisation on such issues as units of consumption and communications / interfaces.

The latter is a particularly important aspect of interoperability, since a supplier will wish at least to have standard information flows and protocols, even though there may be geographic differences in the smart meters installed by the various DSOs and differences in the means by which data is transmitted. A common response to this is to require maximum use to be made of existing standards such as EDIFACT, open systems and non-proprietary software, but this is unlikely to address all the issues involved in specifying communications, data interfaces, software and protocols.

Without an agreed specification which guarantees a sufficient minimum level of interoperability, metering costs increase and there is the potential for 'stranding' (see 4.2 below). Also, if all suppliers do not enjoy the same service, or a supplier faces technical barriers in interfacing with meters installed by a competitor, there are potential adverse impacts on customer service and supply competition, including customer switching.

3.4 'Future proofing'

Historically, conventional metering functionality has changed only slowly, allowing long meter lives subject only to ensuring that accuracy is maintained. The selection of any advanced metering system is more complicated since such solutions depend heavily on technology which is subject to rapid change and innovation.

The response to this problem is to seek to 'future-proof' smart metering as far as possible, with preference again being given to open and flexible systems rather than those tied into manufacturer-specific solutions.

One approach has been to see the smart metering system as two distinct elements – the basic, conventional measurement unit and a more sophisticated information processing unit, with the latter capable of being periodically upgraded to enhance the services provided, thus allowing technical innovation and competitive differentiation and accommodating evolving industry requirements.

4. Legal and regulatory considerations

4.1 The role of regulators

In October 2007, ERGEG produced a position paper on smart metering, with a focus on electricity regulation (E07-RMF-04-03). This recommended that national regulators introduce minimum functional requirements for smart meters in order to ensure a certain standard of data quality and functionality and so reduce investment risk for meter operators. ERGEG acknowledges that in most Member States, such a smart meter policy would require new legislation, but urges regulators should be prepared to use their existing powers to the full to support the introduction of smart meters (assuming the business case supports this) and to act to remove barriers and to assist in standardisation work.

The first Citizens' Energy Forum in October 2008 invited ERGEG to present a status review of its report on smart metering at the next Forum with particular attention on minimum technical functionality and minimum system capabilities criteria for smart meters. The report should also

provide an overview of existing cost/benefit analyses that have been undertaken in Member States.

The ERGEG work programme for 2009 therefore envisages a status review of smart metering (electricity and gas), leading on to recommendations on the regulatory aspects of smart metering in the first quarter of 2010.

At national level, regulators have a major role in overseeing the introduction of smart meters and metering systems, not only to ensure industry agreement to appropriate standardisation of functionality and interoperability but also to ensure there is the right regulatory framework for industry players and proper management of operational aspects such as smart meter roll-out programmes and changes to industry dataflows.

4.2 Stranding

Where smart meter roll-out is on an accelerated basis, conventional meters are replaced before the normal time for replacement. This represents a significant additional cost to the meter owner/operator (typically the DSO).

While this aspect is normally recognised in any economic assessment of smart meter roll-out, Member States and regulators will need to consider whether stranding costs are material and if so how they should be reflected in the value chain.

4.3 Standardisation and procurement

Those wishing to purchase gas or electricity meters require those supplying meters to comply with the provisions of the Measuring Instruments Directive (MID), which governs the technical metrology of meters within the EU. The MID does not specifically deal with advanced or smart meters, although the technical measurement of gas / electricity and meter accuracy are covered.

The Citizens' Energy Forum considered smart metering in October 2008 and requested the European Commission to examine the issue of standardisation of minimum functionality and to report back at the next meeting. In December 2008 the Commission issued a mandate asking CEN, CENELEC (the European Committee for Electrotechnical Standardisation) and ETSI (the European Telecommunications Standards Institute) for 'the development of an open architecture for utility meters involving communications protocols enabling interoperability'. Eurogas has been invited to participate as an interested stakeholder in the Smart Meters Co-ordination Group being established by the European Standards Organisations.

In addition there is the recent Memorandum of Understanding between CEER (the Council of European Regulators) and CENELEC on electricity metering.

By these initiatives, it is hoped that an EU specification for smart metering in gas, electricity and water can be produced with minimum delay. In the meanwhile those wishing to implement smart metering solutions are advised to envisage separately specifying the two elements of measurement and information processing, as noted in 3.4 above.

4.4 Data Protection

Concerns have been raised whether automated gathering of metering or consumption data at frequent intervals might be in breach of the customer's right to protect his personal data. This could be seen as applying e.g. if data is transmitted more frequently than is required for billing purposes or if smart meters are fitted against the customer's wishes. The concerns relate to how metering/consumption data is used, and what safeguards should be in place e.g. encryption.

Some believe that since the metering data relates to the meter or supply point and not to the customer, consumption information is not 'personal data'. To ensure a robust basis for deploying smart meters, further consideration of the data protection aspects is essential.

The Citizens' Energy Forum therefore underlined the need for further work and studies by different stakeholders on developing common guidelines for minimum requirements for digital security and privacy of consumers' information. It invited ERGEG in its review of smart metering to consider privacy and data protection issues.

5. ACTIONS

SMDC has agreed the following action plan to ensure Eurogas can more effectively represent the interests of gas suppliers in this area.

- Establish a task force to help represent the interests of gas suppliers on smart metering for household customers and to share information on national developments
- Co-operate closely with Marcogaz on gas industry input to future standardisation work on smart gas meters
- Liaise with Eurelectric to ensure a common or co-ordinated approach, while recognising the particular requirements of gas metering
- Work with CEER/ERGEG to help resolve legal and regulatory issues in relation to smart metering
- Support ERGEG's planned status review of smart metering.

dmj 22.4.09