



## Position Paper

# Smart Metering for Europe

*A key technology to achieve the 20-20-20 targets*

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The European Smart Metering Industry Group (ESMIG) represents the leading companies in the European Smart Metering market and covers all aspects of Smart Metering, including electricity, gas, water and heat measurement. Member companies cover the entire value chain from meter manufacturing, installation, consulting, software, to communications and system integration. ESMIG provides knowledge and expertise on Smart Metering and related communications at a European level. By giving support to European Union Institutions and Member State governments the Industry Group aims to assist in the development of national and European-wide introduction, rollout and management of Smart Metering systems. ESMIG membership is open to any company supplying utility metering products or services within Europe.

## **Introduction**

The European Union set itself ambitious targets by the year 2020: to reduce the output of greenhouse gases by 20%, to improve energy efficiency by 20% and to increase the percentage of renewable energy by 20%. To achieve these targets the development of fully operational Smart Metering systems across Europe is essential. Smart Metering technologies deliver significant benefits to consumers as well as a more sustainable energy management and an increased security of energy supply.

Smart Metering is not an end in itself, but without Advanced Meter Management (AMM) none of the European Union's ambitious energy and environmental policy goals are possible. Yet, we as the industry representative are concerned that the importance of Smart Metering is not fully understood within the ongoing debates among decision-makers. AMM is more than electronic metering. It presents the potential of bringing the electricity supply system into the digital and information age, providing the key technology which is a prerequisite for the smart grid.

The current European transmission grid will have to meet several challenges, such as the integration of large amounts of off-shore wind power, the massive trading flows a liberalized energy market entails and active demand-side management measures. The ability to cope with these challenges is exactly what is required in order to meet the EU's energy and environmental policy goals. If the grid is to be transformed to perform these functions then the associated metering infrastructure must be likewise transformed because this is what will change consumers' behaviour, and will provide the data transparency needed to make the network function.

The European Union now has the chance to lay the foundation for the energy supply system of the future. The so-called 3<sup>rd</sup> Energy Package currently being debated among the European Union Institutions seeks to complete the European internal market for energy. The climate package will set the stage for a technologically advanced and sustainable energy supply system of the future.

AMM is a crucial enabling technology in both these areas and supports all three pillars of European energy policy: environmental protection, competitiveness and security of supply. But now is the time to act.

**A first reasonable step is to create transparency for all stakeholders by legislating the rollout of AMM. This means that a requirement to introduce AMM across Europe within a specified timeframe must be included in the final version of the Energy Package.**

ESMIG believes that a 20% increase in energy efficiency, a 20% share of intermittent renewable energy in the system and a reduction of CO<sub>2</sub> emissions by 2020 will not be possible without the introduction of AMM. Only through the widespread deployment of Smart Metering, will the European Union be able to meet its 20-20-20 goals.

One step further, if the full potential results of demand-side response are applied throughout Europe, this would achieve 50% of the 2020 energy saving objectives and 25% of the CO<sub>2</sub> objectives laid out by the EU.<sup>1</sup>

It is not only the credibility of the EU that is at stake, but the future of our environment, the empowerment of consumers and even our standard of living.

### **Description of Smart Metering**

Smart Metering or Advanced Meter Management is more than Automated Meter Reading (AMR). At a minimum Smart Metering allows for two-way communication between the utility (supplier or DSO (Distribution System Operator)) and the meter. "Smart meters are modern, innovative electronic devices capable of offering consumers, suppliers, distribution network operators, generators and regulators a wide range of useful information, enabling the introduction of new energy services. . ."<sup>2</sup>

Smart Metering systems consist of several different technical components and vary in design dependent on the specific market conditions in different Member States, but the majority include the following functions:

- Accurate measurement of electricity, gas, water or heat usage
- A data transmission infrastructure
- An IT environment suited to the ensuing data volumes
- A consumer-oriented invoice system
- Local display of energy usage data

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<sup>1</sup> Demand Response: A Decisive Breakthrough for Europe, CapGemini in cooperation with VaasaETT and Enerdata, 2008

<sup>2</sup> Jorge Vasconcelos, Survey of Regulatory and Technological Developments Concerning Smart Metering in the European Union Energy Market, RSCAS Policy Papers, European University Institute, Florence School of Regulation, September 2008, p. 2

This combination of technologies provides for genuine two-way information flows and communication between the meter and relevant parties (supplier/DSO/metering services co.) and their systems. It also allows for automated reading and accurate data collection on consumption, and delivers detailed consumption data to consumers. Moreover, it facilitates advanced energy services, thus improving energy efficiency and encouraging a more rational use of energy. As the communication is not limited to meter data alone but also includes information about consumption, tariffs, alerts and complementary services, Smart Metering is not simply electronically collecting information from a meter, but sending information to the consumer as well.

Smart Metering should not be confused with smart grids, which were defined by the Smart Grids Technology Platform as “an electricity network that can intelligently integrate the actions of all users connected to it – generators, consumers, and those that do both – in order to efficiently deliver sustainable, economic and secure electricity supplies.”<sup>3</sup> Smart Metering is, however, a prerequisite for a smart grid. Smart Metering can stand on its own, without a smart grid, but the converse is not true: **There can be no smart grid without Smart Metering.**

### **Benefits**

The benefits of Advanced Meter Management are systemic. Increased electrical system efficiency as well as security and environmental protection are made possible by the deployment of Smart Meters. Benefits accrue along the length of the value chain from the end consumer and supplier to the grid operator and the electricity producer.

Consumers receive more accurate information on their energy consumption and billing, thus allowing them to modify their behaviour and reduce the amount of energy they consume. Advanced metering has even been described as “a technology that offers revolutionary change in the relationship between supplier and customer”.<sup>4</sup> Moreover, consumers can benefit from increased competition among energy retailers and enjoy greater ease of switching.

Suppliers would not only save on the costs of meter reading, but could offer a range of products that would be most economical for consumers’ consumption patterns. These could include time of use tariffs and critical peak pricing. Both consumers and suppliers would also benefit from increased customer services: correct billing data, move in/out reading services, consumption and reading support via telephone.

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<sup>3</sup> European Technology Platform, SmartGrids, Strategic Deployment Document for Europe’s Electricity Networks of the Future, Draft for 3<sup>rd</sup> General Assembly, September 2008

<sup>4</sup> Ross McCracken, “Smart Meters: Gizmo or Revolution?” in Energy Economist, Issue 317, 1 March 2008

The data provided by Advanced Metering Systems can improve the utilisation of grid and generation assets. Currently, the DSO has only rudimentary information at best on electricity flows in their grid. The deployment of Smart Metering would allow the DSO to accurately pinpoint outages, reduce non-technical losses and thus optimise the functioning of the distribution grid.

Advanced Metering also provides benefits to electricity generation. Increased demand-side management and changes in consumers' energy use patterns could slow the rate of energy demand growth and thereby reduce the need for additional generation capacity. Advanced Metering could “round off the peaks” thereby reducing generation costs and making more efficient use of existing generation capacity.

Further benefits of Smart Metering would be the ability to facilitate the adoption and feed-in of micro-generation, as well as the societal benefits of increased energy efficiency and reduced greenhouse gas emissions.

### **EU Legislation on Smart Metering**

Although the second Internal Market for Electricity Directive (2003/54/EC) laid out measures on customer protection in its annex, which included the right to receive “transparent information on applicable prices and tariffs”, it was the Security of Electricity Supply Directive (2005/89/EC) which addressed Smart Metering for the first time. Article 3 says that Member States shall take appropriate measures to safeguard the balance between the demand for electricity and availability of generation capacity, which may include, *“encouragement of the adoption of real-time demand management technologies such as advanced metering systems.”*

The Directive on Energy End-use Efficiency and Energy Services (2006/32/EC) addressed the subject more specifically, but at the same time placed so many conditions on the meter and billing requirements as to make the mandate very weak. Article 13 of the Directive stipulates that:

*“Member States shall ensure that, in so far as it is technically possible, financially reasonable and proportionate in relation to the potential energy savings, final customers . . . are provided with competitively priced individual meters that accurately reflect the final customer’s actual energy consumption and that provide information on actual time of use.”*

Moreover, *“Billing on the basis of actual consumption shall be performed frequently enough to enable customers to regulate their own energy consumption.”*

**The stipulations in the Directive on Energy End-use Efficiency and Energy Services are insufficient to bring about an expeditious EU wide rollout of Smart Metering which is necessary for the EU to meet its 20-20-20 goals.**

A mandated, EU-wide rollout of Smart Metering will provide the maximum benefits to consumers, the energy supply system and European society as a whole at the lowest cost. Because many of the benefits of AMM are systematic, a geographical rollout of Smart Metering, as opposed to an ad hoc supplier-oriented customer-by-customer approach, brings the greatest benefits to the most actors at the lowest cost. If meters are replaced on an individual basis – either in new buildings, at the time of renovation, or on customer demand – the meter owner faces higher procurement and installation costs per meter. An AMM deployment which is drawn out over a long period of time increases costs.

Only with an area-wide introduction of Smart Metering can its benefits be realised across the value chain – from consumer to supplier to grid operator and even in generation. Many of the operational benefits of Smart Metering will accrue to the network operator only through an area-wide rollout.

Moreover, a deployment conducted on an ad-hoc basis raises questions of interoperability and stranded investments. Would a supplier be willing to provide a customer with a smart meter, knowing that the customer could switch suppliers in a very short period of time? Or would the customer be locked-in to a longer term contract as the “price” for being provided with a smart meter? It is only through a mandated EU-wide rollout of Smart Metering that all European customers can be guaranteed a right to consumption information regardless of nationality or energy supplier.

**A clear mandate for the Member States to introduce Smart Metering with a definitive deadline for the completion of deployment is indispensable, if the European Union is going to meet the formidable energy and environmental challenges of the future.**

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