

**Communication by the Commission de régulation de l'énergie of 6 June 2007 concerning changes to low-power low-voltage electricity metering ( $\leq 36$  kVA)**

The electricity metering activity is governed by several legal provisions:

- Paragraph III of Article 19 of the Law of 10 February 2000 relating to modernisation and development of the electricity public service stipulates that distribution system operators are responsible for the metering required in the exercise of their mission;
- Article 13 of the Law of 9 August 2004 relating to the electricity and gas public service and electricity and gas companies defines the role required of distribution system operators in the matter of metering;
- Paragraph IV of Article 4 of the Law of 10 February 2000, as set out in the Law of 13 July 2005 setting energy policy guidelines, specifies that metering provisions implemented by distribution system operators must allow suppliers to “offer their customers different prices depending on the periods of the year or the day which encourage system users to reduce their consumption during periods when overall consumption by all users is highest”; for the application of these measures, calling for the implementation of advanced metering, the law refers to a Council of State decree made at the proposal of the Commission de régulation de l'énergie.

Through its communications of 5 July 2001, 29 January 2004 and 10 January 2006, CRE has expressed its opinion several times on general electricity metering activities. It will now undertake to prepare the proposal for the Council of State decree required by the law.

However, at a time when the EDF distribution system operator ERD is announcing a pilot project intended to set up a large-scale advanced metering system, CRE considers it essential to begin immediately to outline the policy to be followed for electricity metering at installations connected to low voltage public distribution grids for a power level of 36 kVA or less.

This policy outline was established by CRE on the basis of work carried out within the Consumer Working Group (GTC) after consulting the various interested parties during April 2007. They specify the objectives to be attained by the metering measures that will be set up by electricity distribution system operators. In this respect, CRE stresses that these measures, which are the legal responsibility of distribution system operators in a monopoly situation, must allow an improvement in the conditions under which they accomplish their missions and must also allow a diversification of offers and efficient handling of the demand. Under no circumstances must such measures include functions that exceed these objectives and that may be used in a competitive context.

In addition, distribution system operators must be careful to protect commercially sensitive information and privacy.

With regard to the metering system proposed by ERD:

- the “pilot project” must be seen as an experiment. It will therefore be subject to assessment, after which large-scale deployment of the system will only be possible on the basis of a CRE decision;
- the experiment will be prepared and monitored jointly by distribution system operators, consumers and suppliers within the framework of the Consumer Working Group (GTC);
- a “Monitoring Committee” chaired by CRE will be responsible for checking that the following guidelines are observed and for the assessment after the experimental period.

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Electricity meters measure energy flows at the interface of a private installation and the public distribution grid. They must fulfil four objectives:

- 1) For consumers: provide easy access as often as possible to information about their actual consumption;
- 2) For suppliers: allow billing of their customers on the basis of diversified offers, and especially according to time-of-use;
- 3) For distribution system operators: allow billing of the use of their grids;
- 4) For electricity system operators: provide access at any time to the information required for managing the electricity supply and demand balance.

Low-voltage electricity meters currently installed in France for low-power installations ( $\leq 36$  kVA) are primarily electromechanical meters read manually twice a year at best. Their functions are closely linked to the billing of the regulated tariff applied by incumbent suppliers (EDF and local distribution companies). They do not allow the objectives set out above to be achieved.

Over the coming years, all low-voltage meters installed in France will have to be adapted.

This adaptation implies, firstly, the installation of advanced meters capable of making the required measurements at the 34 million sites connected to public electricity distribution grids, and secondly the establishing of information and communication systems allowing the information supplied by the meters to be managed and quickly and reliably circulated to consumers, grid operators, suppliers and duly approved third parties.

This operation can only be cost-effective if the hardware, software and systems installed across the national territory have standard characteristics: firstly minimum compatibility conditions and secondly common performance levels and functions allowing all interested parties to benefit from effects of scale.

Compliance with these conditions is one of the prerequisites to be met before CRE can consider the costs borne by grid operators for deployment and implementation of the corresponding systems to be covered by tariffs for use of public electricity grids.

Given its cost and complexity, deployment of a generalised remote management system for electricity meters can only be justified if it provides improvements in the three following areas:

- consumer information;
- operation of the electricity market;

- grid operators' costs.

To achieve this result, a set of objectives to be met by advanced metering systems potentially deployable in France must be defined.

## **1. Consumer information**

Advanced metering systems must allow periodic bills to be issued on the basis of real data, by measuring actual consumption and supplying information about when the energy was used.

Advanced metering systems must provide for recording of the maximum value of withdrawn power, to allow, if necessary, *ex post* billing of used power or overrun of subscribed power.

Advanced metering systems must have a display unit allowing easy checking of at least the hourly and seasonal registers and items allowing assessment of instantaneous active power, instantaneous overrun of subscribed power and maximum value of subscribed power.

To solve the problem of keeping users informed locally when the meter is not easily accessible, the local communication functions of the advanced metering system must be able to transmit certain metering data recorded or measured by the meter to remote display equipment.

Advanced metering systems must measure and record the active energy load curve at the metering point concerned. It must be possible to adapt the measurement integration step to later changes in needs by allowing, as a minimum, step settings of 30 and 60 minutes. The load curve storage capacity must be at least two sliding months with a 30 minute step.

## **2. Improving electricity market operating conditions**

Electricity market operation can be improved by developing consumer information concerning real electricity consumption characteristics and also by developing the system's ability to allow suppliers the possibility of proposing differentiated offers to consumers.

### ***2.1 Setting up a framework that encourages new supply and service offers***

Each electricity supplier must be able to choose his own supply tariff schedules, independently of the tariff schedule for use of public electricity grids. Advanced metering systems must be easily adaptable to new tariff structures and must therefore allow for at least four registers for the public electricity grid utilisation tariff and at least ten registers for suppliers.

Any new advanced metering system must allow tariff setting with mobile peak periods definable by each supplier one day ahead. Grid operators' time limit for taking suppliers' requests into account must not be earlier than 16.00.

New communication and information systems linked to the advanced metering system must be compatible with any supplier's proposal of limited-duration and limited-quantity supply offers.

At least one relay switched according to the distribution system operator's or supplier's tariff schedule must be integrated into the new meters. If market players wish to propose systems offering other functions, such as a larger number of tariff relays, they must use additional equipment which can use the customer remote information communication interface (TIC).

Advanced metering systems must allow continued use of existing internal electrical installations employing the tariff control relay system. In particular, the regulated sales tariff must be given the same status as any new tariff.

## **2.2 *Eased access to metering data for authorised players***

The communication system and information system managing the advance metering function must allow routing of all metering data recorded and measured by the meters. The data concerned are, as a minimum, those relating to energy flows (index, load curve items, maximum value of withdrawn power, etc.) and data relating to quality of electricity supply.

Communication systems must have sufficient capacity to provide interested parties with daily updates of all data recorded by the meters.

Common data exchange conditions as close as possible to recognised information system standards must be established by distribution system operators on the basis of mutual consultation. These common exchange conditions and the choice of systems implementing them must be described in reference technical documents published by distribution system operators and monitored by CRE.

Electricity market players must be able to access metering data as rapidly as distribution system operators.

The “*customer remote information output*” (TIC) must be maintained in the new advanced metering systems. Some data must therefore be transmitted compulsorily via the TIC interface. This includes, as a minimum, the instantaneous power, one or more indications of the tariff period (including a withdrawn power overrun alert), hourly and seasonal registers, load curve items, the maximum value of withdrawn power, the latest discrepancies in quality of electricity supply and the status of the integrated switch.

## **2.3 *Improving reliability, rapidity and fluidity of the various market processes***

Distribution system operators ensure that electricity market processes (connection, disconnection, supplier switch, power change, etc.) benefit as fully as possible from the information capacities offered by advanced metering systems, by discontinuing the use of estimated data, by automating access to metering parameters and by facilitating meter reading.

Advanced metering systems must allow the most common types of tariff parameter modification (changes to tariff schedules, subscribed power changes, etc.) to be carried out remotely.

The advanced metering system must integrate the function of a remotely controlled switch and of a cut-off device with a tripping point that can be set remotely in steps of 1 kVA. Special attention must be given to the reliability of disconnection procedures implementing a remotely controlled cut-off device, especially with regard to the safety of persons and goods.

The communication system capacity must allow the use of a load curve to handle customers benefiting from supply offers constructed on the basis of tariff periods other than those for the regulated electricity sales tariff applied by incumbent suppliers.

## **3. Control of grid operators’ costs**

Distribution system operators’ deployment of advanced metering systems must allow more detailed measurement of the quality of service provided by the grids and also contribute to reducing operating costs borne by grid operators.

### ***3.1 Contribution to monitoring the quality of electricity supply***

Advanced electronic meters must integrate monitoring of the voltage level and the occurrence of long and short cuts.

The data must be storable by the meter, or failing this, by the information system, for a minimum period of two sliding years.

It must be possible to adapt the information system to voltage level evaluation methods other than those based on the current integration time of 10 minutes.

### ***3.2 Reducing the volume of non-technical losses***

Advanced metering systems must:

- integrate anomaly detection systems and self-diagnosis functions designed to alert the grid operator;
- contain functions allowing the level of distribution grid losses to be determined. They must allow identification of the zones in which losses exceed the technical loss values predicted by grid simulation models.

### ***3.3 Minimising costs of routine and non-routine operations***

Advanced metering systems must allow most of the operations currently requiring an agent's visit to be carried out remotely. Priority must be given to regular reading operations, supplier switching, changes to subscribed power, terminating or re-establishing access, disconnection or reconnection and operations resulting mainly from the opening of the electricity market to competition, such as changes to the tariff schedule and special readings.

Remote operations must be carried out within time frames complying with the requirements of new market processes and operations. The chosen technologies must allow priority processes and operations to be defined, with a view to improving the quality of the service provided to the customer.

The communication system and information system managing the metering function must include interfaces with the information systems of suppliers of electricity or associated services. The detailed technical specifications of such interfaces must be defined jointly with these suppliers.

Produced in Paris, on 6 June 2007,

For the Commission de régulation de l'énergie,

The chairman,

Philippe de Ladoucette