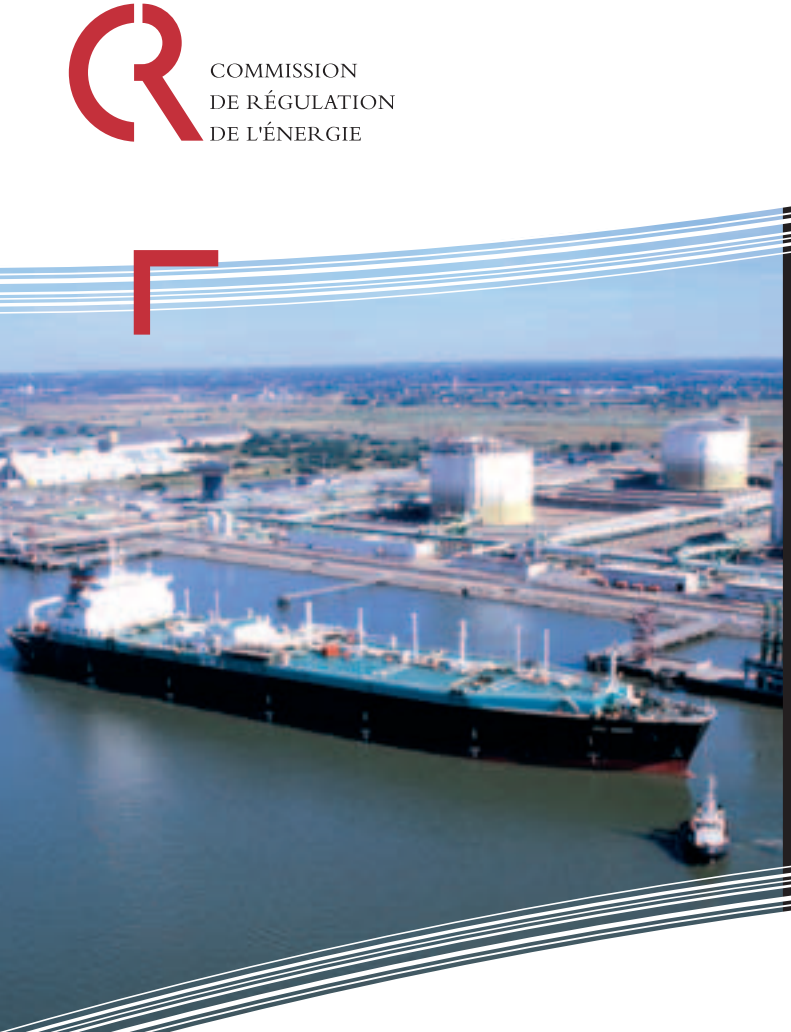
COMMISSION
DE RÉGULATION
DE L'ÉNERGIE



Activity Report
2009

Contents

Message from the board

Philippe de Ladoucette (chairman), **Michel Thiollière** (deputy chairman), **Maurice Méda** (deputy chairman), **Anne Duthilleul, Marie-Solange Tissier, Jean-Paul Aghetti, Jean-Christophe Le Duigou, Hughes Hourdin, Emmanuel Rodriguez**

2010 marks the tenth year in the existence of the French Energy Regulatory Commission (CRE).

On this occasion, the CRE wants to start and coordinate discussions on future electricity grids by organising the first large-scale symposium in France on this strategic subject. Intelligent electricity grids or smart grids are more responsive and communicative so that they can meet the challenges of the integration of renewable energy production, the control of the demand for power, the management of peak consumption, the development and use of electric cars and, naturally, the opening up of the markets.

This anniversary is also an opportunity to take stock of the state of openness of the gas and

electricity markets. They are still dominated by regulated sales tariffs. On the 31st of December 2009, 94% of sites, all categories included, representing 65% of consumption (82% taking TaRTAM into account) are on regulated tariffs for electricity and 88% of sites representing 52% of consumption for gas. Nevertheless, the number of residential customers who left the regulated tariffs doubled in 2009 in the electricity market and increased by a third in the gas market. Though the markets are gradually opening up, this should accelerate further.

In the gas sector, the undertaking given to the European Commission by GDF SUEZ that it will limit its share of the long-term entry capacities in France to 50% from 2014 for a period of ten years is a positive signal that will give a greater range of choices for consumers.

Because of the upheavals that the gas market has experienced recently, due to non-traditional types of gas coming into production, consumers should benefit from more favourable gas prices than those resulting from long-term contracts indexed on oil prices. However, to benefit from these opportunities and guarantee security of supplies, we must continue to invest in gas infrastructures at national and European level.

Similarly, the bill on the new electricity market organisation, called NOME, aims to set up more favourable economic conditions for EDF's competitors than they have today by providing for regulated access to incumbent nuclear reactors.

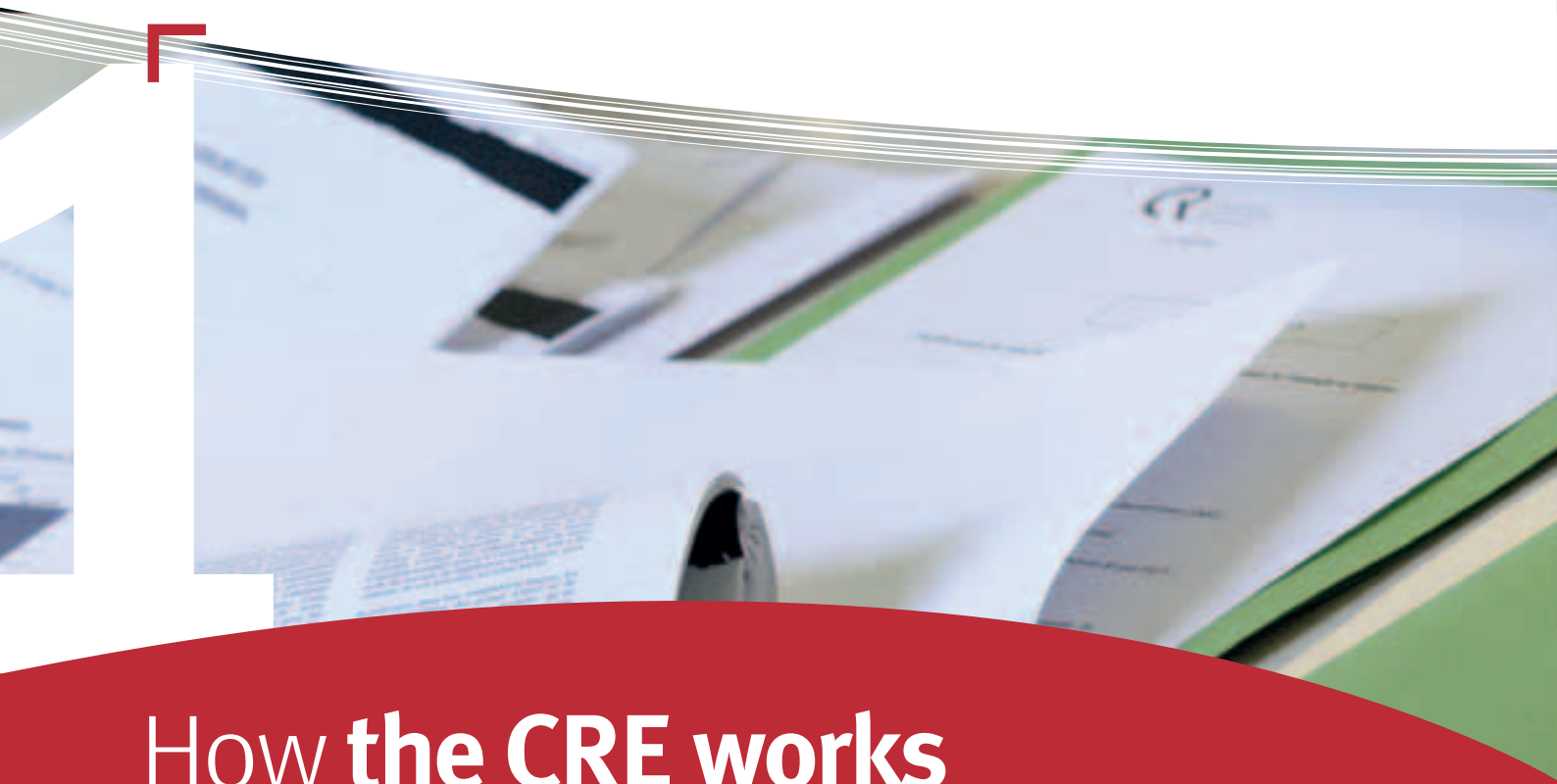
Even though the opening of the markets is continuing in Europe, national markets are still too isolated. Today, we are far from achieving the objective of a single European energy market that is both competitive and sustainable and where the security of supply is guaranteed. One of the main obstacles to the creation of a single European energy market lies in the limitations of the interconnections between grids. It is essential that these interconnections be developed and that the cooperation between grid operators be strengthened because they contribute, on the one hand, to a better security of supply and, on the other, to the correct operation of the markets, by encouraging international trade. Interconnections also enable us to benefit from the complementary natures of electricity generation facilities, minimise the costs of production and reduce CO_2 emissions. This is why their development is a priority.

2010 opens up new prospects for remedying, at least partially, some of these inadequacies and giving a new impetus to the creation of the internal market to the benefit of the European consumer.

The implementation of the 3rd energy package should bring us closer to the objective of a single market with the creation of the Agency for the Cooperation of Energy Regulators (ACER) and also with the top-down harmonisation of regulator powers. In particular, they have been given the task of certifying the independence of transmission system operators, to guarantee transparent and non-discriminatory access to their grids.

The 3rd energy package and the future law on the new organisation of the electricity market are measures that will bring new dynamism into the markets and improve how they operate. The CRE will play a major role in implementing these reforms, which will profoundly modify the energy sector in France and Europe.

Energy was the starter culture of the European construction. It was firstly on the basis of what Robert Schuman called the "concrete achievements" in this strategic sector that the European project prospered. Today, the considerable extent and diverse range of energy sector challenges fully justify making energy a major European policy. Moreover, the Lisbon Treaty contains in embryo the elements of an ambitious policy in this field. ■



How **the CRE works** and the **activity** of the CoRDiS

*Words followed by * are defined in the glossary p. 113*

1. CRE powers and organisation

1.1. Introduction to the CRE

The French Energy Regulatory Commission (CRE) is an independent administrative authority created in 2000. It is organised by the laws of the 10th of February 2000, the 3rd of January 2003, the 9th of August 2004 and the 7th of December 2006, which transposed the European Directives of 1996, 1998 and 2003 concerning the internal electricity and natural gas market.

As the energy sector regulator, the CRE's overall mission is to "contribute to the proper operation of the electricity and natural gas markets, to the benefit of end consumers" (1). It has a statute guaranteeing the independence of the missions generally devolved to the independent administrative authorities responsible for regulating an economic sector open to competition and marked by the presence of incumbent operators.

Its legitimacy is based on:
- its capacity for expertise and responsiveness,
- the use of transparent procedures for formulating its decisions and opinions (working groups, public consultations, hearings),
- independence from government and the players and companies in the sector regulated.

1.1.1. A national and European regulation area

The CRE has a dual mission: to ensure that the electricity and gas markets are open to competition and function correctly and to contribute to the creation of an internal European electricity and gas market. Its action therefore takes on a both European and national dimension, manifested by its membership of the Council of European Energy Regulators* (CEER), an association that brings together the regulators of the Member States and those of Iceland and Norway. The CRE also takes part in the work of the European Regulators Group for Electricity and Gas* (ERGEG), set up by the European Commission in 2003, and whose mission is to advise and support it in its action for strengthening the internal market.

1.1.2. The organisation of the electricity and gas markets

The European Directives of 1996, 1998 and 2003, transposed into French law, organise the opening up of the electricity and gas markets to competition by providing for:
- the free choice of electricity and gas supplier* for consumers,
- the freedom to set up for producers* and suppliers,
- a non-discriminatory, transparent and available right of access for all of the users of the electricity and gas transmission and distribution grids*, LNG terminals* and natural gas underground storage facilities*.

In order to ensure that these three main principles are respected, the directives made the independence of transmission system operators* (TSO) and distribution system operators* (DSO) (2) compulsory in relation

(1) Art. 28 of law no. 2000-108 of the 10th of February 2000.
(2) For distributors serving more than 100,000 customers.

to the production and trading activities of the integrated companies*, without however imposing the separation of the ownership of the grids. This principle of independence, combined with the control by the national energy regulators, is the foundation on which the electricity and gas markets currently operate.

Today, the electricity and gas markets are organised into activities open to competition (production, trading and supply of all consumers) and monopoly*, but regulated, activities (transmission, distribution and LNG terminals).

1.2. CRE missions

1.2.1. The CRE regulates the electricity and gas networks

1.2.1.1. The CRE guarantees the right of access to public electricity grids and natural gas networks and installations

To fulfil this mission, the CRE:
- proposes to the government the tariffs for using the electricity and gas transmission and distribution grids and the LNG terminals,
- settles disputes about access to and use of the public electricity grids and natural gas installations and levels sanctions on any failure to fulfil the obligations incumbent upon the operators or users of an electricity or gas infrastructure.

1.2.1.2. The CRE ensures the correct operation and development of electricity and gas networks and the independence of their operators

To fulfil this mission, the CRE:
- approves investment programmes of the TSOs in both electricity and natural gas,
- approves the principles of legal and account unbundling* between the activities of transmission, supply and distribution and ensures that the gas and electricity transmission system operators obey to compliance programs and that they remain independent,
- supervises the organisation of the balancing mechanism* on the electricity grids and the operation of the balancing mechanism on the natural gas transmission networks,
- approves the methods for calculating and allocating interconnection* capacities in close collaboration with the regulators of all Member States.

1.2.1.3. The CRE contributes to the creation of the internal European gas and electricity markets by harmonising the rules for access to the networks and optimising the interconnections between national markets

To fulfil this mission as a member of the ERGEG, the CRE:
- takes part in European work, within the regional electricity and gas initiatives, that is making gradual progress in managing exchanges at cross-border interconnections and the emergence of European regional markets,
- ensures the consistency and convergence of regional initiatives, a condition for the integration of markets,
- takes part in the formulation of rules for the operation of the internal European market.

1.2.2. The CRE regulates the electricity and gas markets

The CRE ensures that the electricity and natural gas markets operate correctly in order for competition to develop to the benefit of the consumer.

1.2.2.1. The CRE monitors the transactions that take place on the electricity and natural gas wholesale markets, whether organised or not, and exchanges at the borders

The monitoring of a market consists of checking that prices are actually formed by the normal interplay of competition. The CRE's action is aimed at detecting any behaviour that seems abnormal and that may be the result of a manipulation by analysing prices and the players' decisions. Monitoring encourages the development of transactions by reassuring the players, and strengthens the market capacity to give the appropriate price signals. Confidence in the formation of prices is also a determining factor for investors.

1.2.2.2. The CRE ensures that retail markets operate correctly

To fulfil this mission, the CRE:
- organises the work of consultation bodies bringing together all of the stakeholders (consumer

representatives, suppliers, grid operators and public authorities) and reviews the experiments with upgraded metering* systems,
- releases the retail market observatory,
- issues opinions about the regulated electricity and gas sales tariffs for people in disadvantaged situations,
- submits any cases it discovers of abuse of dominant position and practices that hinder the free play of competition to the competition authorities.

1.2.2.3. The CRE contributes to the implementation of support measures for the production of electricity and the supply of electricity and gas

To fulfil this mission, the CRE:
- manages the calls for tenders issued by the Minister of Energy in the framework of the pluriannual investment programme* for electricity generation,
- issues opinions on the purchasing prices for electricity generated by cogeneration* or renewable energy*,
- manages the compensation mechanism for suppliers paying public service charges (assessment of the suppliers' charges and associated contributions, recovering and compensating suppliers bearing charges associated with the *Caisse des Dépôts*),
- manages the compensation mechanism for suppliers paying charges related to the transitional regulated tariff for balancing markets* (TaRTAM).

1.2.2.4. The CRE keeps all consumers informed

To fulfil this mission, the CRE jointly manages the www.energie-info.fr web site with the national energy ombudsman, the General Directorate for Competition Policy, Consumer Affairs and Fraud Control (DGCCRF) and the General Directorate for Energy and Climate (DGEC). The role of this single portal is to inform consumers about procedures and their rights in energy matters.

In addition, the CRE participates in Énergie-Info, an information service shared with the national energy ombudsman that answers individual requests from consumers. This service can be contacted by telephone (3), post and e-mail.

1.3. Organisation of the CRE

1.3.1. The members of the board

The members of the CRE's board define the main guidelines and adopt the decisions and opinions that become part of the CRE's general action.

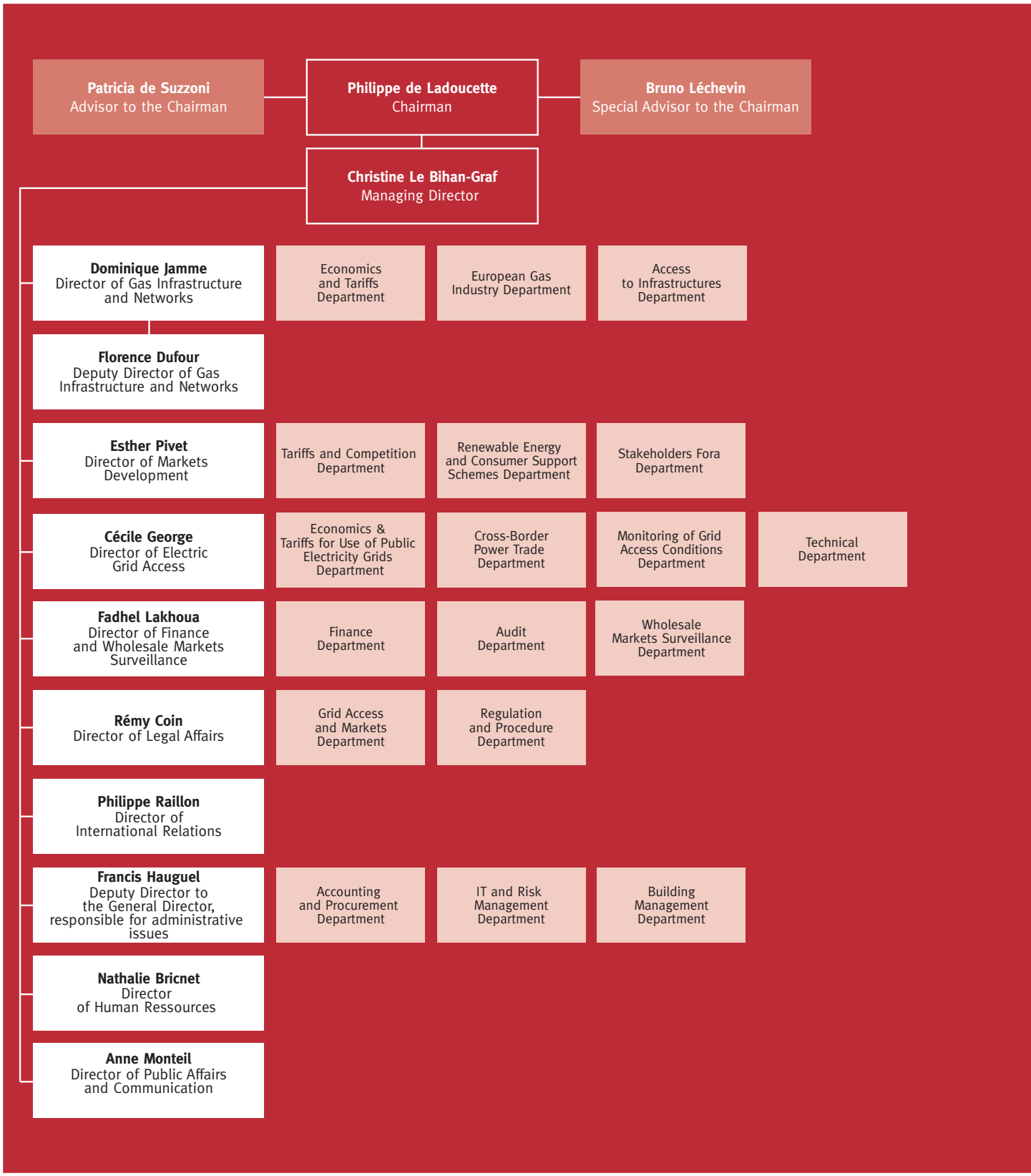
The CRE's board is made up of:
- the chairman of the board, nominated by decree issued by the President of the Republic,
- two deputy chairmen, nominated by the President of the National Assembly and the President of the Senate respectively,
- two members, nominated by the President of the National Assembly and the President of the Senate respectively,
- one member, nominated by the President of the Economic, Social and Environmental Council,
- one member, nominated by decree,
- two representatives of electricity and natural gas consumers, nominated by decree.

Their mandate is for six years and is not renewable.

On the 31st of December 2009, following the renewal that took place in 2008, the board consisted of five full-time members, including the chairman, and four part-time members. Between February and April 2010, three full-time members, whose mandates had expired, were replaced. On that occasion, a new full-time deputy chairman was named by the President of the Senate: M. Michel Thiollière; the two other members of the board were replaced by part-time commissioners: Mme Anne Duthilleul, nominated by the President of the Economic, Social and Environmental Council, and Mme Marie-Solange Tissier, nominated by the President of the National Assembly. Therefore, the composition of the board now entirely complies with the configuration provided for by the law of the 7th of December 2006: three full-time members (the chairman and the two deputy chairmen) and six part-time members.

(3) Azur no. 0810 112 212.

1.3.2. CRE services



1.4. Activity in figures

Between the 1st of January and the 31st of December 2009, the CRE board held 173 commission sessions resulting in 85 resolutions.

The CRE's resolutions are made public on its web site.

1.5. Budget resources

The CRE's financial resources are recorded in the State budget. They come under the "Economy" mission, within the "Development of businesses and employment" programme, of which they form the "Regulation and control of energy markets" action.

The budgets allotted to the CRE since 2006 by successive finance laws have proved to be insufficient for dealing with both the issues involved in the complete opening up of markets and the extension to the supplementary missions provided for by the law of the 7th of December 2006. These resources have led to harsh decisions being taken during in day-to-day management, at a time when the CRE's activities should be developing in view of both the future bill on the new electricity market organisation (NOME) and the implementation of the 3rd energy package.

In 2009, the CRE's budget allotted in the finance law [4] was €19.9M, divided into a staffing budget of €11.8M for a maximum staff of 131 full time employee equivalents (FTEE), and an operating budget of €8.1M. These sums are unchanged in relation to 2008. The final consumption of the budget alloted was 99.95%.

The budget alloted to the CRE for 2010 is at the same level as 2009, i.e. €20M, including €11.9M for staffing costs with a limit on staff of 131 FTEE and €8.1M for operating costs.

Therefore, the stabilisation of a structurally balanced budget is essential in order to enable the CRE to fulfil its missions and to deal with the consequences of their growth in the years from 2011 to 2013.

The new community measures also provide for the strengthening of the independence of national regulators, a fundamental condition for the markets' confidence. To this end, the regulation proposes that "the regulatory authorities should be given a legal personality, benefit from budgetary autonomy and have the appropriate human and financial resources and independent management".

1.6. Staff

The actual workforce of the CRE's services (excluding the board) fell from 129 on the 31st of December 2008 to 125 on the 31st of December 2009, for a budgetary limit on staff of 131 FTEE. This change can be explained by the transfer of CRE staff attached to the shared Énergie-Info service of the Electricity and Gas Markets Directorate [5] to the national energy ombudsman.

In 2009, 87.20% of staff was managerial. The division between men and women almost reached equality (59 women and 66 men), with strong female representation in senior management posts (8 women and 6 men). The average age was 36.5 years. The average seniority was 2.99 years for the whole of the working community; it falls to 2.45 years for the project leaders alone FIGURE 1 p. 10.

86% of staff was contract staff, with more than a third coming from companies in the energy sector. 14% were civil servants.

The diversity in the professional origins of the staff (companies, consultants, universities, other regulators, etc), their level of technical skills and the breadth of their experience should be stressed. The missions assigned to the CRE call for a high level of expertise in the field of energy but also those of financial auditing and law. Therefore, the corresponding members of staff are recruited with a very high level of training and generally have one or more types of full professional experience. Currently, only 18 employees at the CRE are in their first job. The main pool from which they are recruited is that of the graduate engineering schools, graduate business schools and audit firms.

85.4% of staff is directly assigned to regulatory functions and exercise professions in relation to the CRE's own activity (engineers, economists, technical economists, financiers and lawyers). The support functions (administration, accounting, computing and communication) are provided by 14.6% of the agents.

(4) Excluding any budget regulation measures.
(5) Markets Development Directorate since the 9th of April 2009.

In 2009, there were two changes in the CRE's organisation: firstly, the Wholesale Markets Department was transferred from the Electricity and Gas Markets Directorate (which became the Markets Development Directorate) to the Financial Directorate (now called the Finance and Wholesale Markets Surveillance Directorate), secondly, the staff of the shared Énergie-Info service of the Electricity and Gas Markets Directorate were transferred to the national energy ombudsman.

A dynamic in-service training policy ensures the continuous adaptation of skills to the exercise of regulation, increases the effectiveness of staff and supports professional projects, including those leading to qualifications. In 2009, 68% of staff benefited from at least one training course.

The CRE's remuneration policy is based on the recognition of professional skills (level of training and experience acquired), taking into account the responsibilities exercised and the efforts made by each employee to achieve the objectives individually assigned.

2. The Standing Committee for Dispute Settlement and Sanctions (CoRDiS)

2.1. The powers, composition and activities of the CoRDiS

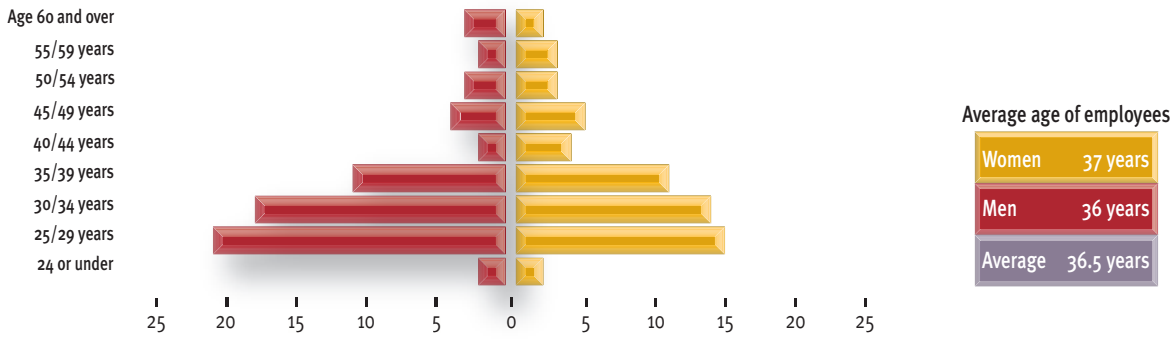
The law of the 7th of December 2006 invested the CRE's CoRDiS with the power to settle the technical and financial aspects of disagreements "between the operators and users of public electricity transmission and distribution grids, between the operators and users of natural gas transmission and distribution infrastructures, between the operators and users of natural gas storage installations and between the operators and users of liquefied natural gas* (LNG) installations, related to access to those grids, infrastructures and installations or to their use".

In 2009, the CoRDiS made seven substantive rulings, one ruling on protective measures and one withdrawal ruling. Various questions were tackled, among them the conditions of connection* of electricity generators and industrial consumers to the public transmission and distribution grids, the sharing of the gas supply by a boiler and cogeneration plant located near each other via a single gas delivery point*, the question of the compulsory participation of a producer in the system services* and the billing of imbalances to a natural gas supplier by the public gas distribution grid operator.

2.2. Three rulings have taken on a particular importance

The CoRDiS has used three rulings to specify the conditions under which an industrial consumer connected to the distribution grid can request connection to the transmission grid, the methods of metering electricity of a site indirectly connected to its public grid by the public electricity distribution grid operator and, finally, the terms under which an electricity generator participates in the system services.

FIGURE 1
AGE PYRAMID AND AVERAGE AGE OF EMPLOYEES (EXCLUDING THE BOARD)



Source: CRE

2.2.1. An industrial consumer already connected to the public distribution grid can be connected to the public transmission grid

On the 2nd of June 2009, the Société agro-industrielle de patrimoine oléagineux (Saipol) submitted to the CoRDiS the dispute that it was having with RTE, the public electricity transmission system operator, about the new conditions for connecting its industrial site consuming electricity.

Saipol believed that, according to the decree of the 4th of July 2003, if its installation's reference connection voltage range, given its connection power, was rated at high voltage between 1 and 50 kV, it could, in application of article 4 of the decree of the 27th of June 2003, have it connected at the higher voltage level, in this instance the electricity transmission network at high voltage between 50 kV and 130 kV with the agreement of the TSO – as the regulatory texts concerning connection to the public electricity transmission grid do not, in such a case, specify an obligation to obtain the agreement of the TSO or DSO.

In its ruling, the Committee recalled that the decrees of the 13th of March and 27th of June 2003 and the implementing decrees of the 17th of March 2003 and 4th of July 2003 concerning the connection of installations to the public electricity distribution and transmission systems defined criteria for assigning a connection request in a rational and non-discriminatory way to the competence of either the TSO or the DSO.

It indicated that such regulation was an obstacle to a user freely choosing the grid to which it wishes to be connected, in conformity with the principles laid down by the European Union Court of Justice in its decree of the 9th of October 2008 related to case C-239/07, Julius Sabatauskas, from which it results that the Member States retain a large margin for manoeuvre for directing grid use towards one or another type of grid.

Nevertheless, the Committee observed that, according to article 3 of the decree of the 13th of March 2003, the connection to the public transmission grid of installations whose reference connection comes under the distribution grid in principle could be considered with the agreement of the parties concerned.

It deduced from this that, when presented with a request for connection to the public transmission grid of a consumer installation already connected to the public distribution grid, RTE was under an obligation to investigate that request by seeking the agreement of the public distribution grid operator concerned, as it did in this instance for Saipol.

The grounds for refusal put forward by ERDF held that, on the one hand, the electrical power requested to justify such a connection must be greater than 40 MW and, on the other, no specific technical constraints made the connection of the Saipol installation to the transmission grid necessary. After finding that these reasons were not among the number of those expressly and restrictively set out by the provisions

From left to right: Jean-Claude Hassan, Pierre-François Racine (chairman), Dominique Guirimand, Jacqueline Riffault-Silk

of article 23 of the law of the 10th of February 2000, the Committee invited RTE to continue with a connection of the Saipol consumer installation to the public transmission grid. This ruling became definitive in the absence of an appeal to the Court of Appeal in Paris.

2.2.2. A site indirectly connected to the public distribution grid can benefit from a metering service on the part of ERDF

The connection to the electricity grid and the contractualisation of the buy-in obligation* between the owner of a biomass* electricity generation installation and EDF are two completely independent processes. The connection consists of physically connecting the installation to the electricity grid so that it can physically exchange energy with it, whereas the buy-in obligation mechanism enables the installation's owner to draw up a sale contract.

So, in its buy-in obligation contracts, EDF associates the type of connection and the contractual choice. Or more accurately, EDF requests that producers wishing to benefit from the buy-in obligation for the sale of their total production have a direct connection to the electricity distribution grids, or at least that the metering of the electricity generated by the installation is done by the public distribution grid operator.

In this instance, for the call for tenders concerning the generation of electricity from biomass and biogas* issued in 2005, the Bioenerg company was authorised to operate a biomass installation. This installation was not directly connected to the public electricity distribution grid.

EDF imposed a condition on Bioenerg, prior to the conclusion of a buy-in obligation contract, specifying that the metering of the electricity generated by a biomass installation should be done by the public distribution grid operator, in this case ERDF.

ERDF having refused to provide such a service for the specific reason that Bioenerg was not connected to the public distribution grid, Bioenerg submitted to the CoRDiS, on the 21st of July 2009, a request for protective measures accompanied by a substantive request.

It asked the CoRDiS to charge ERDF with metering the electricity generated by its electrical installation.

The Committee rejected the request for protective measures on the 30th of July 2009. Conversely, in its substantive ruling dated the 2nd of October 2009, is recalled that, in the first place, neither the law of the 10th of February 2000, nor any text implementing it, subordinated the purchase of electricity generated in the context of the legal buy-in obligation system to a direct connection to a public distribution grid.

The Committee then observed that, in this instance, nothing on the technical or safety level required that the Bioenerg generation installation be directly connected to the public electricity distribution grid.

In addition, the Committee recalled that, on the one hand, article 4.11 of the tariff rules relating to supplementary services provided under the monopoly of the public electricity distribution grid operators, appended to the ruling of the 7th of August setting the effective date of the tariffs for supplementary services provided under the monopoly of the public electricity distribution grid operators, provides for an annual metering service consisting of, "for an installation indirectly connected to the public distribution grid by the intermediary of private electrical installations belonging to a third party, doing the metering reading, control and calculation in order to assign the withdrawal* and/or injection flows at the boundary of a balancing responsible entity* and the publication of the metering data" and, on the other, that by virtue of the provisions of article 2 of the same appendix, "the same services are proposed to all of the users" by the public distribution grid operator.

The CoRDiS deduced from this that ERDF, in a monopoly situation for the supply of metering services, is obliged, unless there is some legitimate reason, to offer this service to all users placed in the same situation.

Having considered that Bioenerg came within the category of users indirectly connected to the public distribution grid and benefiting, in application of the law, from a buy-in obligation contract, the Committee invited ERDF to offer Bioenerg an agreement for setting up a buying-in metering service to enable the execution of its buy-in obligation contract. This ruling has been referred to the Court of Appeal in Paris by ERDF.

The legal and regulatory framework concerning these sites connected for buying-in may change following the transposition of directive 2009/72/CE, and in particular article 28 thereof, into French law.

2.2.3. An electricity generator is obliged to participate in the system services

In order to ensure the balancing of flows of electricity on the grid and the safety, security and efficiency of the grid, as the law imposes it on the public electricity transmission system operator, RTE must guarantee the stability of the frequency and voltage of the current at the different points of the grid.

To this end, grid users, mainly the generators, shall make a part of the active (frequency regulation) or reactive (voltage regulation) power of their generation permanently available to RTE, and it shall be possible to modulate the power very quickly and automatically. The resources made available to RTE are called system services.

The Poweo Production company, which wishes to develop two electricity generation installations made up of natural gas fired combined cycle power plants* at Toul and Pont sur Sambre, contested the fact that RTE could force it to participate in system services. Therefore, it submitted the dispute it was having with RTE on this point to the CoRDiS on the 3rd of July 2009.

Paragraph III of article 15 of the law of the 10th of February 2000 states that: "the public transmission grid operator ensures the availability and the implementation of the services and reserves necessary for the operation of the grid. [...] To this end, it freely negotiates with the producers and suppliers of its choice the contracts necessary for carrying out the missions set out in the preceding paragraph according to competitive, non-discriminatory and transparent procedures, such as public calls for tenders and the recourse to organised markets".

To settle this dispute, the Committee considered that, in the light of directive 2003/54/CE of the 26th of June 2003, these provisions should be interpreted, on condition that it asks all of the producers, as reserving for the sole public transmission system operator the choice of the producers or suppliers whose services it finds necessary for fulfilling its balancing mission, without allowing the latter the option of not participating in the system services.

Therefore, it concluded that Poweo Production had no basis for maintaining that the mechanism for participating in the system services set up by the legislator was optional, and rejected its request.

On the question of remuneration for this participation, Poweo Production argued that it lost earnings due to the fact that it could not achieve the value for the generation capacity dedicated to the system services by selling the corresponding generation on the market. Consequently, it demanded that its remuneration, on account of the frequency, be based on the market rules.

The CoRDiS firstly recalled that, although paragraph III of article 15 of the law of the 10th of February 2000 specifies that balancing services are provided according to competitive, non-discriminatory and transparent procedures, it nonetheless does not oblige RTE to resort to organised markets.

The Committee then considered that the remuneration conditions proposed by RTE, which are based on a single price based on the generators' costs and are given in a public document, i.e. the tariffs for use of the public electricity grids, are exempt from any infringement of the rules of competition, transparent and non-discriminatory. This ruling was also referred to the appeal Court in Paris by Poweo Production.

2

Implementation of the 3rd energy package will strengthen regulation in this sector

*Words followed by * are defined in the glossary p. 113*

1. Adoption of the 3rd energy package will lead to the strengthening and the top-down harmonisation of the missions and powers of the national regulatory authorities

After eighteen months of negotiations, the 3rd legislative package reforming the internal energy market was adopted by the European Parliament and the European Union Council and published in the Official Journal of the European Union on the 14th of August 2009. It is made up of two directives and three regulations. The directives must be transposed by the 3rd of March 2011.

The provisions of the 3rd package represent important progress in terms of the previous legal framework. The community legislator considered that independence must be guaranteed and that the missions and powers of the national regulators should be harmonised top-down within the context of setting up the internal energy market. In practice, in spite of a common pool of powers provided for by the directives of the 2nd package, the powers and competences of the regulators in the European Union's Member States are very varied.

Thus, the regulator has:
- a distinct legal personality,
- functional independence vis-à-vis any public or private enterprise,
- separate annual budgetary credits and autonomy in the execution of the budget alloted,
- resources that enable it to fulfil its missions.

The directives also specify that the people responsible for managing the regulatory authority act independently of any commercial interests and do not ask for or accept direct instructions from any government or other public or private entity in the execution of regulatory tasks.

The directives set out a certain number of general objectives for the regulators that form the framework within which they carry out their missions and exercise their powers. The scope of these general objectives is not negligible, even if they do not necessarily have normative value.

Thus, the regulator must promote a competitive, secure and sustainable internal energy market within the European Union, including at regional level. It must develop competitive regional markets that function correctly within the Community. It must contribute to ensuring that non-discriminatory networks are set up that are secure, reliable, high-performance and consumer oriented, promote energy efficiency, in both the transmission and distribution grids, and promote the decentralised generation of energy from renewable energy* sources.

1.1. The regulator has an increased role in the procedure for pricing the use of electricity and gas networks and liquefied natural gas* installations

Like those of 2003, the new directives specify that the regulatory authority sets or approves the tariffs for use of transmission and distribution grids, or at least the methodologies used to calculate them, before they become effective and according to transparent criteria. The provisions of the 2003 directives that allowed the regulatory authority to submit a proposed decision to the competent body of the Member State have disappeared from the 2009 directives.

1.2. The new certification procedure strengthens the regulator's control over the independence of grid operators

The 3rd package profoundly modifies the rules concerning independence of grid operators, particularly transmission operators ,(see part 2 of the report at 2.1. p. 16).

The entry into force of the 3rd package strengthens the regulator's role by setting up an operator certification procedure intended to guarantee the independence of transmission system operators* (TSO). In order to certify that a TSO complies with a model of independence, the regulator has to check that the operator in question fulfils all of the requirements of the model chosen. The proposed certification decision drawn up by the regulator will be submitted to the European Commission for its opinion. The regulator will take full account of it. After the certification phase, the regulator will be responsible for monitoring the TSO's compliance over time with the chosen model.

The CRE and the TSOs should start the preparatory work in 2010.

1.3. The regulator's powers for monitoring the market are extended to the retail market

In addition, the 3rd package results in a harmonisation of the national regulatory authorities' powers in the field of the monitoring of wholesale and retail markets. From now on, in accordance with articles 37 and 41 of the Electricity and Gas directives, the national regulatory authorities' missions involve:

- "monitoring the degree of transparency, including that of wholesale prices, and ensuring that companies respect their obligations to transparency…",
- "monitoring the level and the effectiveness achieved in terms of the opening up of the markets and competitiveness for the wholesale and retail markets…".

Finally, cooperation between sector regulators and financial market regulators is encouraged and new provisions on the obligations to keep data are introduced. Article 40 of the Electricity directive stipulates that "the Member States shall oblige supply companies to keep the pertinent data about all of the transactions concerning electricity supply contracts* and derived instruments on electricity signed with wholesale customers and transmission system operators available to the national authorities, including the national regulatory authority, the national competition authorities and the Commission, for the purposes of executing their tasks, for a minimum duration of five years". A similar provision is referred to in article 44 of the Gas directive.

1.4. The regulator receives new general powers

The regulator has increased powers in terms of collecting information and monitoring the markets, in cooperation with the competition authorities and the financial market regulators.

The regulator can demand all of the information necessary for executing its tasks from the companies (justification for refusal to give access to a third party, information on measures for strengthening the grid, etc). It can also impose penalties in cases of non-compliance with legally binding rulings adopted by the national regulator or the Agency for the Cooperation of Energy Regulators (ACER).

The amount of the financial penalties that can be imposed by the regulator is increased from the current 3% of the turnover of the company penalised to 10%.

2. The concern for the independence of system operators (unbundling) is at the heart of the 3rd package…

2.1. … mainly for the transmission system operators

The directives define three possible models of independence for the TSOs: asset unbundling, the independent system operator (ISO model) and the independent transmission operator (ITO model). The provisions of each model cannot be mixed. Asset unbundling is the main model but, when the transmission grid is operated by a vertically integrated company* (VIC) on the 3rd of March 2011, the two other models can be considered, the Member States are free to choose. In every case, a Member State cannot stop an operator from conforming to the asset

unbundling model. In addition, a TSO formed by the asset unbundling must be protected from any take over of control by a company with an energy supply or production activity.

The ITO model attracts particular attention in so far as it is the result of modifications to the European Commission's initial proposals requested by some Member States, including France.

Apart from the regulator's increased control, this model is distinguished by the level and detail of the independence requirements. In practice, the ITO model strengthens the requirements applicable to the TSOs. They cover:

- the TSO's own resources: it must have all of the human, technical, material and financial resources necessary for exercising the transmission activity,
- relations with the VIC: the VIC is prohibited from providing services to the TSO. Commercial and financial relations between the VIC and the TSO must be recorded in a register that is made available to the regulator on request. Any commercial and financial agreements between the VIC and the TSO shall be submitted to the regulator for approval,
- corporate governance: the regulator has a power of opposition in the matter of the nomination or dismissal of the people responsible for general management. The directors are subject to exclusion rules. The directors and employees of the TSO may not own any interests or directly or indirectly receive any financial advantage from the VIC other than the TSO,
- setting up a commitment programme, compliance with which is monitored by an executive responsible for compliance with commitments and who is independent.

In addition, the TSO must prepare a 10-year development plan, to be submitted to the regulator. In a case where the TSO, for reasons other than imperious reasons over which it has no control, does not make an investment, which should have been made as part of the 10-year grid development plan, within three years, the regulator may take specific measures to guarantee that the investment in question is made.

These new requirements may lead to important modifications in the running of the TSOs concerned by the ITO model.

The 3rd package also provides for the publication of noncommittal ten-year plans for the development of European transmission infrastructures by the European Networks of Transmission System Operators* (ENTSOs) every two years. Regional plans will also be drawn up as well as national plans for the TSOs under the ITO model.

The ACER will play an important role in assessing these plans and in checking consistency between the national, regional and European investment plans. According to the Gas regulation, it could, for example, demand that modifications be made to the plans drawn up by the TSOs if the latter are under the ITO model. Furthermore, the ACER should issue a reasoned opinion as well as recommendations for the attention of the ENTSO-G, the European Parliament, Council and Commission, if it considers that the proposed grid development plan in the whole of the Community does not contribute to the non-discriminatory treatment, effective competition and efficient functioning of the market or to a sufficient level of cross-border interconnection*. In the same article, it is also stated that the ACER will monitor grid development plans in the whole of the Union.

2.2. ... but also for the distribution system operators

The changes concerning the independence of distribution system operators* (DSO) are less important than in transmission. Three additions have been made:

- "the distribution system operator shall have the necessary human, technical, material and financial resources for carrying out its tasks". This provision should lead to some DSOs developing the scope of their activities that were previously outsourced,
- obedience to compliance programmes, already provided for by previous texts, should be monitored by an independent executive responsible for compliance with commitments and he must have access to all of the information of the DSO and related companies needed for carrying out this task,
- DSOs belonging to a vertically integrated company must refrain from any confusion with a distinct identity of the vertically integrated company's supply branch in their communication practices and brand strategy.

This provision should lead to some DSOs, or related supply companies, changing their names, logos and/or commercial brands.

3. The Agency for the Cooperation of Energy Regulators is a new tool for the coordination of regulators at European level

The 3rd package set up a new regulation architecture at European level by creating the Agency for the Cooperation of Energy Regulators (ACER), intended to help the regulatory authorities to carry out at community level the regulatory tasks done by the national regulatory authorities in the Member States, to coordinate their actions and, if necessary, to complete it.

The ACER is a community agency. Its governing bodies are made up of a committee of regulators, an administrative council, a director and a committee of appeal. It should have a budget of between €6 and €7M and will be made up of about 50 people. The committee of regulators, made up of members of the national regulatory authorities, will have a central power within the ACER: the director issues rulings, recommendations and opinions after having previously received a favourable opinion from the committee of regulators. The committee of regulators also has an influence over the assessment of the ACER by the European Commission. It can make recommendations about any modifications to the rules relating to the ACER both in terms of its organisation and its operation. The committee of regulators takes its decisions on a two-thirds majority basis, according to the "one member, one vote" rule.

The CRE is a member of the ACER committee of regulators.

The ACER will be operational in March 2011. European regulators and the European Commission are working together to set it up. The director of the ACER should be nominated by the end of the first half of 2010.

3.1. The ACER will communicate the actions of national regulators at European level

First of all, the ACER has a consultative role with the European Commission, Member States and the national regulatory authorities. It can submit an opinion on the measures that it considers necessary for the development of the energy markets to the European Parliament and the European Commission. In this role, it will replace the European Regulators Group for Electricity and Gas* (ERGEG), which will cease to exist when the ACER is operational.

The ACER has been assigned other tasks. A national regulatory authority can also appeal to the ACER if it considers that a decision of another national regulatory authority does not conform to the framework guidelines.

The ACER issues opinions and recommendations intended for the TSOs, the European Parliament, the Council of the European Union and the European Commission as well as opinions intended for the national regulatory authorities on cross-border questions. In the context of the drawing up of European grid codes by the TSOs, the ACER submits non-binding framework guidelines to the European Commission.

The framework guidelines set clear principles and objectives for drawing up European grid codes, which are currently drawn up by the TSOs.

These network codes cover cross-border questions in areas that are listed by the regulations of the 3rd package: allocation of capacities and congestion* management, balancing, conditions of access to the grid, etc.

If the ACER makes a recommendation to the European Commission, these grid codes can be made legally binding by means of the committee procedure.

Therefore, the ACER will have a central role in drawing up European grid codes.

In addition, the agency is invested with a general power for monitoring the internal energy market.

Finally, it can take certain individual decisions (regulation system applicable to the cross-border infrastructures, waivers) but solely as a last resort. At the request of the ACER, the national regulatory authorities must amend the national ten-year grid development plans so that they comply with the community ten-year plan.

3.2. The national regulatory authorities will play an active role within the ACER

European regulators, including the CRE, will have to play an active role in the ACER as members of the committee of regulators. The regulators already cooperate in the Council of European Energy Regulators* (CEER) and the ERGEG. Furthermore, the following could be considered:

- creating a strong link between the committee of regulators and the work of the CEER,
- providing experts and staff at management level.

BOX 1
PUBLICATION OF THE 5th CRE REPORT ON COMPLIANCE PROGRAMMES AND THE INDEPENDENCE OF SYSTEM OPERATORS

- The CRE has published its fifth annual report on compliance programmes and the independence of system operators. This report describes the state of play concerning the actions taken by the system operators in the matters of non-discrimination, transparency, protection of commercially sensitive information* and independence from parent companies. The report also presents future developments, especially those related to the 3rd energy package.
- The compliance programmes and the independence of system operators specified by the community and national regulations are guarantors of non-discrimination. Transparent and non-discriminatory access to the gas and electricity grids is an essential condition for the development of consumer confidence and related to the procedure of opening up the markets.
- Grid operators have reached a satisfactory degree of maturity in compliance with the programmes. The issues are now maintaining the level of obedience to compliance programmes and the sustainability of this procedure.
- The operational independence of the transmission system operators is effective in terms of the current criteria. Distribution system operators, which have been split off into subsidiaries more recently, have stabilised their operational management during 2009 and affirmed their position as separate players in the energy market.
- The general public remains largely unaware of the distribution system operators and their mission, even though several communication operations took place in 2009. This lack of awareness leads to an ambiguity that is unfavourable for the opening up of the markets. The efforts made in terms of raising awareness should therefore be continued and generalised. Furthermore, the parent companies must not seek to benefit from reflected brand image due to the missions entrusted to grid operators.

3

The regulator contributes to the **correct operation of the infrastructures, the interconnection of European grids** and **security of supplies**

*Words followed by * are defined in the glossary p. 113*

Electricity grids

1. The regional initiatives and work within the ERGEG contribute to the effective construction of the internal market

1.1. While awaiting the transposition and implementation of the 3rd energy package, the ERGEG is preparing the future operating rules for electricity grids

The European Regulators Group for Electricity and Gas* (ERGEG) has started work on writing the framework guidelines intended for the European Networks of Transmission System Operators for Electricity* (ENTSO-E) for drawing up the European grid codes intended to facilitate the integration of markets and cross-border exchanges.

1.1.1. A pilot project on connection and access to the electricity grids is in progress

During 2009, the ERGEG held a public consultation on a proposed guide to good practices for connection* and access to the electricity grids. The role of this guide was to inspire the different stakeholders and Member States (government, regulators and operators of public grids), taking into account the lessons learned from the wide scale incidents on the 4th of November 2006 (6).

In addition, it could lead to drawing up framework guidelines for the European grid codes on the rules for connection to the grid. Without having legal force, this work will prefigure the task of the Agency for the Cooperation of Energy Regulators (ACER) on the framework guidelines, so that the agency is able to master its missions as soon as it is installed.

The European regulation of the 13th of July 2009 specifies the drawing up of 12 grid codes in different areas relating to the grid and the integration of the market (7).

1.1.2. Guidelines on the balancing mechanism* were published in September 2009

Within the Grid and electricity markets working group, the CRE takes part in drawing up guidelines on the integration of balancing markets. These guidelines were submitted for consultation for the first time in 2006. The ERGEG has taken into account the results of the study with consultants, launched with the European Commission following the first consultation, on the interactions of the balancing markets with the intraday market* and the automatic reserves. These guidelines were submitted for a new public consultation during 2009 and were approved and published by the ERGEG in September 2009.

The major principles are:
- the model of exchanges between the transmission system operators* (TSOs) to be prioritised in order

(6) An electrical failure that affected several million Europeans. A black out was avoided due to cooperation between electricity grids.
(7) In 2010, CRE and ERGEG will work on the following three themes: network security and reliability, connection to the network, capacity allocation and congestion management.

to develop balancing service exchanges is the BALIT (Balancing Inter TSO) model, in place since March 2009 on the France-England interconnection*,
- the absence of interconnection capacity reservations in favour of exchanges of balancing services. With the aim of not penalising commercial exchanges, the TSOs should only set up balancing exchanges if there are remaining interconnection capacities after carrying out commercial exchanges as close to real time as possible,
- the absence of charges for access to the interconnection capacity for the balancing service exchanges. The interconnection capacity remaining after the commercial exchanges as close as possible to real time is lost if balancing exchanges are not set up. Therefore, this capacity should be free of charge.

These guidelines will be used by the ACER as the basis for writing its framework guidelines concerning the balancing rules.

1.2. The CRE exerts a strong influence in the process of regional integration of electricity markets in order...

1.2.1. ... to improve long-term capacity allocation mechanisms

1.2.1.1. A unique set of rules has been approved for the Central-West region

Following the creation of the first CASC-CWE regional auctions platform (Capacity Allocation Service Company for the Central-West-European electricity market), the CRE, in coordination with the other regulators of the Central-West region, has approved a single set of rules for allocating capacities of the whole of the region. These rules replace the three sets of rules that existed previously (8).

Apart from harmonising the access conditions for the interconnection in this region, the new rules contribute several important improvements, including:
- setting up a mechanism for the automatic resale of unused long-term capacities,
- the firmness of capacities nominated on the German borders,
- the replacement of bank guarantee by a deposit in a professional account created with the sums of each auction.

1.2.1.2. The CASC-CWE platform will be extended to the Central-South region's interconnections

The Central-South region's regulators have strongly encouraged the creation of a single contact point for the allocation of the region's interconnection capacities. Discussions are in progress to enable the region's TSOs, including the Swiss TSO, to join the CASC-CWE platform, which currently organises the Central-West region's explicit auctions. The new entity that results from these talks will be the first multi-regional auction platform. It will organise the explicit auctions for all of the interconnections of the two regions as of the end of 2010 (for the allocation of 2011 capacities).

While awaiting this stage, from January 2010 onwards, RTE has chosen to entrust Terna, the Italian TSO, with the management of the allocation of capacities and the organisation of secondary markets in both directions for the France-Italy interconnection. The new allocation rules, giving concrete form to this transfer of auction management, were approved by the CRE on the 3rd of December 2009.

1.2.1.3. A new set of rules and a new allocation platform have been set up for the France-England interconnection

For two years, in the France-United Kingdom-Ireland region, the France-England interconnection managers (NGIL, on the English side, and RTE, on the French side) have worked on creating a Capacity Management System platform for allocating and nominating cross-border capacities* and a new version of the France-England interconnection rules that complies with the community regulations (9) and is harmonised with those in force on the other European interconnections.

In its decision dated the 3rd of September 2009, the CRE approved the rules submitted to it, resulting in the following main improvements:
- setting up hourly products during the daily allocation,
- setting up closed auctions at the marginal price for all of the due times,
- a firm capacities nomination stage allowing for the compensation of flows in the opposite direction (netting*),

(8) The France-Germany rules, the France-Belgium rules and the rules concerning the Netherlands frontiers with Germany and Belgium.
(9) Regulation EC 1228/2003 and its appendix.

- an automatic resale mechanism for long-term capacities at the daily auction,
- setting up two explicit auctions for the allocation of day-ahead* capacities.

As indicated in the CRE decision, the question of the firmness of nominations is still under discussion between the CRE and the British regulator.

1.2.2. ... to ensure the firmness of capacities

The new set of rules for the France-Spain interconnection that came into force in June 2009 contains innovative measures, such as setting up the automatic resale of non-nominated long-term capacities at the daily auctions and compensation at the price differential in cases of reduction in allocated long-term capacity (10).

This last measure is an alternative to what is usually done for European interconnections. In practice, for the majority of European interconnections, in a case of reduction in allocated long-term capacity before the nomination stage, the holders of capacity receive either a reimbursement for the capacity reduced at the price paid at the corresponding auction or that same reimbursement increased by an indemnity of 10%.

A compensation mechanism at the price differential between the markets better reflects the loss suffered by the interconnection user deprived of its right to make cross-border trades. However, to limit the financial risk that such a compensation mechanismn could represent for the tariff for use of the transmission grids, two limits have been introduced in the new set of rules:
- a ceiling, in order to prevent the monthly amount of indemnities from exceeding the level of receipts received from the auctions of medium and long-term products,
- a ceiling to the price differential used for compensation calculated from the prices observed on the wholesale electricity markets.

Demonstrating the effectiveness of this compensation mechanism should reconcile the antagonistic stances adopted so far by grid operators and market players. Generalisation throughout Europe would be an additional step towards the integration of electricity markets.

1.2.3. ... to gradually integrate the balancing mechanisms

The CRE's approval, on the 22nd of February 2009, of the new version of the rules related to programming, the balancing mechanism and the recovery of balancing costs enabled RTE to launch the BALIT project for the France-England interconnection. This project enables RTE and the English TSO to exchange balancing offers with increased flexibility of the prices of offers.

After a six-month period, the benefits of this type of mechanism are evident:
- an increase in the balancing resources supplied to the TSOs to ensure that system security is maintained (11),
- an increase in the competition on the balancing markets of the two countries (12).

Thus, 61% of the total volumes activated in the framework of BALIT have reduced the cost of balancing for the French balancing entities* in charge, either by a fall in the price of settling negative imbalances or by a rise in the price of settling positive imbalances (13).

The second stage of the BALIT project, in November 2010, will propose even more flexibility in the prices of supplies.

1.2.4. ... and to guarantee greater transparency

In the context of regional initiatives, the regulators have drawn up reports, forming a solid base for the harmonisation and implementation of transparency rules in the wholesale markets. These reports specify the information on physical data to be published by the TSOs or the power exchanges (when, where, how...).

The reports drawn up within the Central-South and South-West regions are the most complete as they include the transparency requirements for the limits of capacities at interconnections.

(10) Read the conclusions of the public consultation on the new set of rules on the ERGEG website at the following address: http://tinyurl.com/nh9f7q.
(11) In practice, the average capacity activated by the two TSOs under the BALIT project was 75 MW, which represents nearly 10% of the total French balancing requirement.
(12) In practice, most (90%) of the offers activated by RTE under BALIT were for reductions, with a total of 115 GWh, which represents 5% of the total reduction volume activated on the French balancing mechanism. From the English side, the price of English increase offers being on average €100 to 150 more expensive than the price of increase offers offered by RTE, most (80%) of the offers activated by the English TSO under the BALIT project were for increases.
(13) RTE invoices the negative differences to the balancing responsible entities, whilst positive differences are paid to the balancing responsible entities.

The effective implementation of these reports is being monitored, as is shown by the assessment report published by the regulators of the North region in August 2008 and which will be followed by a report from the regulators of the Central-West region.

In 2009, RTE made efforts to improve its transparency. It now publishes its forecast of the interconnection capacity available at each border every week. RTE has also undertaken to publish more information about the constraints that limit the capacity available at the interconnections. Finally, the French Electricity Union (UFE) has undertaken (14) to publish the forecast power available in the short and medium term for each production unit with a nominal power greater than 100 MW, starting from mid 2010, and the unscheduled stoppages at production units with a nominal power greater than 100 MW, starting from the end of 2010.

1.3. In June 2009, the CRE published its 3rd report on the management and use of French interconnections

Community regulation 1228/2003 gives the national regulation authorities the responsibility for regularly assessing the methods of congestion* management. Therefore, the CRE's 3rd report on the management and use of interconnections:

- audits the operation of interconnections at the French borders for 2008 and explains the progress made and the difficulties encountered during that year,
- presents the progress of current discussions within each of the four regional initiatives in which the CRE takes part,
- outlines the prospects and defines the issues at regional and European level in order to give players a better view of the CRE's priorities within the regional electricity initiatives and European work.

There is one real barrier to the creation of a single European electricity market: the lack of interconnections between the Member States. Therefore, the national regulatory authorities must ensure that the congestion management methods applied to the existing interconnections are effective.

Regional reports are a summarised response to the recommendations of the ERGEG: "the national regulatory authorities should assess the efficiency of the use of interconnection capacities". Furthermore "the national regulatory authorities should coordinate at regional level with the aim of conducting a more detailed assessment of the economic efficiency of congestion management methods" (15).

2. The CRE action promotes the security of operation and the participation of electricity consumers in the balancing mechanism

2.1. The CRE encourages consumer participation in the balancing mechanism

2.1.1. The first report on the participation of industrial consumers in the balancing mechanism has been drawn up

In April 2008, in accordance with article 15 of the law of the 10th of February 2000, RTE launched an experimental call for tenders intended to conclude contracts for the reservation of power with consumers connected to the public transmission grid for a period of one year. The RTE project provided for the inclusion of contractualisation charges in the balances-imbalances account and their recovery by means of a levy proportional to the power physically withdrawn*. It was approved by the CRE on the 2nd of April 2008.

This call for tenders was related to the fact that there was a potential for reducing consumption of the sites connected to the grid and the advantages of these reductions for the security of the electricity system as well as their economic efficiency.

The experiment, which ended on the 30th of September 2009, proved conclusive. In practice, there was a potential for load shedding of around 101 MW. Consumers responded to RTE's call for tenders and made offers with competitive prices. The participation of industrial consumers reduces the costs of balancing and the risks of failure.

RTE wanted to be able to resort to distributed load shedding for the 2009-2010 winter period in order to reinforce the security of electricity system, especially

(14) Press release on the 1st of July 2009.
(15) Extract from the second ERGEG *Compliance* report.

in the periods of heavy consumption. To this end, RTE offered to enter into power reservation with the industrial consumers that took part in the experiment, for a period going from the 1st of November 2009 to the 30th of April 2010. On the 29th of October 2009, the CRE approved the RTE tender to include the charges for this contractualisation of power reservation in the balances-imbalances account until the 30th of April 2010.

To benefit from the flexibility offered by the industrial load shedding capacities, RTE will launch a new call for tenders during the second half of 2010 with a view to signing pluriannual contracts.

2.1.2. The distributed load shedding experiment has been extended

The principle of balancing by distributed load shedding consists of aggregating interruptions of consumption from consumers connected to the public distribution grid. In practice, it consists of organising 15- to 30-minute cut-offs of machines using thermic energy, such as heating and ventilation.

This balancing raises new questions. An experiment was launched to confirm the advantages of this balancing, for both system safety and consumers. Therefore, RTE proposed temporary rules for implementing it, which the CRE approved on the 5th of December 2007.

However, as no balancing offer had been submitted to RTE by the 30th of June 2009, the working group responsible for monitoring the experiment was unable to reach any conclusions, which is why the CRE, strongly believing in the advantages of balancing by distributed load shedding, decided, in its proceedings of the 18th of June 2009, to extend the period for implementing the temporary rules to the 30th of June 2010.

Furthermore, although paragraph II of article 15 of the law of the 10th of February 2000 entrusts the electricity TSOs with the mission of ensuring the balance of flows on the grid at all times, i.e. the balance between the generation and consumption of electricity, paragraph V of the same article states that the balancing responsible entities are financially responsible to RTE for the imbalance between generation and consumption in their areas.

Therefore, in its communication dated the 9th of July 2009, the CRE pointed out that the operator implementing distributed load shedding should remunerate the balancing responsible entities to which the customers whose supply is interrupted are connected.

This principle, which is already applied to industrial consumers that want to take part in the balancing mechanism, has never been questioned. In practice, the participation of these consumers is subject to the agreement of their balancing responsible entity*. This prior agreement is used to fix the remuneration that the industrial consumer pays to its balancing responsible entity within the framework of a mutual agreement. This power has not been consumed by the industrial consumer so that another consumer can consume it in place of the former. The electricity has been generated, valued via the balancing mechanism by the industrial consumer whose supply is interrupted and then consumed by another consumer.

In the case of balancing by distributed load shedding, the power coming from the customers whose supply is interrupted to enable another consumer to consume it is valued via the balancing mechanism, not by the customer but by an intermediary – the operator implementing balancing by load shedding. Consequently, the operator implementing balancing by load shedding is responsible for the remuneration of the balancing responsible entity for the power that they have generated or bought for their customers whose supplies are interrupted, and which is valued on the balancing mechanism by the operator implementing balancing by load shedding.

In anticipation of the end of the experiment, the CRE asked the participants in the working group monitoring the distributed load shedding experiment to provide feedback, by the 30th of April 2010 at the latest, validating the technical and economic relevance of the generalisation of distributed load shedding on the consumption sites with remote meter reading* and/or profiling.

Furthermore, in order to enlarge, beyond the balancing mechanism, the area distributed load shedding applies to, the CRE asked RTE to:
- define, in consultation with the players concerned, the methods of contractualisation by RTE of a load shedding capacity for consumers connected to the public distribution grids, remunerated at its genuine price. This work, on the basis of the results of the experiment, should enable contractualisation before mid 2010,
- study other mechanisms for valuing distributed load shedding apart from the balancing mechanism.

2.2. The operation of the balancing mechanism and the balancing responsible entity system is improving

2.2.1. The CRE has approved the introduction of new rules relating to the balancing mechanism and the programming

In application of article 15 of the law of the 10th of February 2000, RTE submitted to the CRE draft rules relating to the programming, the balancing mechanism and the recovery of balancing charges on the 30th of December 2008, which it approved on the 22nd of January 2009. The following changes were thus adopted:
- general methods for setting up balancing power exchange contracts (of the BALIT type) between electricity system operators were introduced, separate from emergency reserve exchange contracts,
- methods for remunerating monthly balances-imbalances accounts kept by RTE until payment of the annual account will be set up.

2.2.2. The CRE has approved the introduction of new rules relating to the balancing responsible entities mechanism (supplier)

"Rules relating to the balancing responsible entities mechanism" means both the principles of the flow reconstitution mechanism and the rules applicable to implementing this mechanism between the distribution system operators* (DSO), RTE and the balancing responsible entities.

On the 9th of July and the 1st of October 2009, the CRE ruled on the development of these rules, insisting on the overall securing of the balancing responsible entities mechanism, via the introduction of validity criteria for the bank guarantee of the balancing responsible entities and the addition of a revision clause for the amount of the bank guarantee of the balancing responsible entities.

Gas infrastructure and networks

1. The regional initiatives and the ERGEG's work contribute to building the internal market

Faced with a reduction in domestic gas production, Europe is becoming increasingly dependent on external sources of supply. Making movements of gas easier within the European area is a priority not only for encouraging competition but also for reinforcing the security of supply, with three major challenges: increasing the European system's capacity to respond in a case of crisis, enlarging the market areas that can be accessed by the new import projects and stimulating the liquidity of wholesale markets.

A central role has been given to the regulators in terms of cross-border investments with a view to completing the creation of the internal market. The ERGEG has taken up the subject and is in continuous dialogue with the European Commission, Member States, infrastructure operators and market players.

The CRE is taking part in this work. It is a co-chair of four of the ERGEG's topical working groups [16] dedicated to gas and directs the preparatory work for implementing the 3rd package [17], in partnership with the German regulator.

1.1. With a view to transposing the 3rd energy package, the ERGEG is involved in defining the future rules for operating gas infrastructure and networks

The 3rd package opens a new era in cooperation between regulators and shippers in defining the rules for access to the infrastructures (see part 2 of the report p. 15).

The procedure to be followed for preparing the grid code is defined in a precise way by the new European texts. The ERGEG and the European Commission decided to test it within the framework of a pilot project, launched in September 2009, concerning the allocation of transport capacities at the interconnection points between European grids.

The objective of this pilot project is to reduce the wide range and complexity of the methods used to allocate transport capacity between market players, which is one of the main obstacles to gas movements in Europe. The transport capacities marketed on both sides of the same border point are often different in terms of the volume offered, the types of products and the method of allocation [18].

The ERGEG has asked the CRE and the German regulator to direct the work concerning the pilot project, i.e. to prepare framework guidelines for the allocation of capacities.

The aim of this work is to define simplified and compatible procedures on both sides of interconnection points: the same capacity products, synchronisation of allocations, the same allocation mechanisms. On this last point, a discussion is taking place setting auctions against a pro rata approach [19].

In addition, as the process of preparing framework guidelines gives major importance to dialogue with the network operators and market players, the ERGEG has organised a public consultation, which has aroused great interest from the market. Regular discussions are being held between the ERGEG and the GTE+ [20], in order to best calibrate the proposals. A group of experts made up of industry representatives has also been set up in order to compare the measures being considered from the point of view of the users.

Therefore, the ERGEG's initial text including the framework guidelines for capacity allocations, adopted in December 2009, then submitted for public consultation,

(16) • GSSTF, Gas supply security,
• LNGTF, Liquefied natural gas,
• GIFTF, Investment framework for gas,
• GRITF, Regional gas initiatives.
(17) Pilot project on capacity allocation and work on ten year investment plans.
(18) For example, a shipper wanting to ship gas between the German and French markets has access on the French side to short term products allocated on a pro rata basis, whereas, on the German side, on condition that capacity remains available, he only has access to long term products allocated using the 'first come – first served' rule.
(19) If auctions seem to be generally preferred, *prorata* remains an appropriate solution when market conditions cannot guarantee satisfactory auction results.
(20) GTE+ was the association foreshadowing ENTSO-G, the association of European gas transmission system operators provided for by the 3rd package and founded in December 2009.

is the result of a combination of the guidelines recommended by the European regulators and the opinions of the stakeholders. The ERGEG's final version should be sent to the European Commission by the summer of 2010.

1.2. Regional gas initiatives make it possible to integrate the markets and reinforce the security of supply

Regional gas initiatives, launched in the spring of 2006 by the ERGEG, should make progress with the integration of national markets from the zones only involving a limited number of countries. Depending on the zones, the gas markets have specific features that may justify specific approaches, at least temporarily. It is a question of finding solutions to concrete problems that require dialogue between regulators, governments, grid operators and market players on the basis of shared priorities (the development of interconnections, allocations of capacities, congestion management, transparency, security of supply and interoperability between neighbouring systems).

The CRE is taking part in the three regional gas initiatives (the North-West region and the South region) and shares the leadership of the ERGEG working group on the regional initiatives in the gas sector with the British regulator.

1.2.1. The call on the market for the allocation of capacities at the Taisnières interconnection was positive

The open season* at the Blaregnies/Taisnières interconnection point between Belgium and France, launched in 2007 by Fluxys and GRTgaz, ended at the start of 2009 with the signature of capacity reservation contracts by the shippers*, all of whose demands were satisfied. In total, GRTgaz allocated almost 600 GWh/day over 10 years to 17 entry shippers to France. GRTgaz final investment decision should have been taken in November 2009, in accordance with the information memorandum published by the operators, but had to be delayed, in so far as it depends on the Fluxys investment decision, announced for April 2010.

1.2.2. Integration of the Iberian, French and North European markets is making progress

After a year of preparation, the four French and Spanish TSOs [21] launched two open seasons in July 2009 for the development of interconnection capacities between France and Spain. The committing phase of the open season relating to the route situated to the west of the Pyrenees that includes two interconnection points, Larrau and Biriatou, for the provision of capacities in 2013, took place from July to September 2009. Allocations of capacities were determined following a market test scheduled in the memorandum of information. This determined the levels of demand on the basis of which the development of Larrau then Biriatou will be validated. At the same time, the non-committing phase of the open season for the creation of a new route located to the east, via Catalonia (at Perthus) by 2015, took place.

This call on the market proved to be positive because it revealed a high demand for capacity, particularly from Spain to France. The allocations granted to eight shippers for the western route would allow transport capacity at the Larrau interconnection points to be increased to 5.5 Gm^3/year in both directions in 2013. In the case of the eastern route, the non-committing phase of the open season also revealed high market interest. The committing phase should take place in the first half of 2010 and will include the interconnection capacity of Biriatou, which was offered during the committing phase for the western route. The preparatory work for this committing phase has also made it possible to develop a suitable economic test and define the capacity products offered during the open season.

2. The CRE is playing a part in improving gas infrastructure operation and reinforcing security of supply

The gas conflict between Russia and Ukraine in January 2009 resulted in renewed discussions on the revision of the 2004 European directive concerning the security of gas supplies. Announced for 2010 in the second strategic analysis of energy policy published in November [22] by the European Commission, this revision has been brought forward at the request of the European Parliament. Thus, the Commission published a draft regulation on the 17th of July 2009 that is currently being submitted to the European

(21) GRTgaz, TIGF, Enagas and Naturgas Energia.
(22) European action plan for energy security and cooperation: second strategic analysis of energy policy, 13/11/2008.

Parliament and the Council of the European Union for joint decision.

Whilst recognising that Member States are responsible for the security of supply, the Commission's proposal organises a new crisis management framework at European level aimed at better anticipating failures of supply and guaranteeing the coordination of emergency mechanisms between Member States.

Within this context, the CRE is co-chair, with the German regulator, of the ERGEG working group dedicated to the security of supply.

2.1. Access to gas infrastructures is a determining factor for the proper operation of the markets

The emergence of liquid wholesale markets presupposes that market players can make offers without being constrained by the dimensioning of gas infrastructures or the contractual conditions for using the grid, such as the existence of multiple balancing zones*. The setting up of a large GRTgaz North zone on the 1st of January 2009 by merging the three balancing zones is an example of this. Access to the infrastructures and their use can also be optimised, especially using the use-it-or-lose-it* (UIOLI) mechanism.

The conditions of use of the French gas infrastructures in the north of France changed on the 1st of January 2009 with the setting up of the large North zone on the GRTgaz grid, resulting from the merger of the former East, North and West zones of GRTgaz. This merger, decided on in 2005, required important investments to ensure the fluidity of gas movements, which is essential for the proper operation of such a large market zone. It has created a market zone of about 350 TWh of annual consumption. It has allowed competition to be set up between natural gas from northern Europe and Russia and liquefied natural gas* (LNG). It is directly connected to the Belgian (Zeebrugge) and German (NCG) marketplaces. This increase in shippers' options for diversifying sources of supply reinforces the security of supply and enables different suppliers* to access a great number of customers from the same entry point* TABLE 1.

Eagerly awaited by market players, this new zone was set up without incident and demonstrated its robustness during the Russia-Ukraine crisis.

The link between the GRTgaz North and GRTgaz South zones is crucial for supplying the south of France with gas and also for the proper operation of the market, because most suppliers can only access customers in the south of France via the north. During the allocation of capacity on the North-South link at the end of 2007, 21 shippers obtained capacities starting from the 1st of January 2009 for periods of two, three or four years, thus doubling the number of shippers that can access the GRTgaz South zone.

This link was very heavily used in 2009, on average around 92%. What has made this near maximum use possible is the setting up of nominations that allow for the application of the short-term interruptible UIOLI mechanism. This mechanism allows shippers to nominate quantities greater than the capacities reserved. In a case where certain shippers nominate quantities smaller than the capacities they have reserved, GRTgaz then allocates the non-nominated capacities to the shippers that have nominated more than their reservations.

TABLE 1
NUMBER OF SHIPPERS ACTIVE ON THE NATURAL GAS NETWORKS AND INFRASTRUCTURES

	Transmission		Storage		LNG terminals		Distributor	
	GRTgaz	TIGF	Storengy	TIGF	Fos	Montoir	GrDF	LDC*
December 2009	57	19	24	10	2	4	19	28
December 2008	49	16	22	8	2	4	12	28

Source: CRE

* Local distribution company.

The result is an optimisation of the use of the North-South link by the redistribution of capacity between shippers FIGURE 2.

2.2. The balancing of the GRTgaz grid changes

The proper operation of the market requires a physical balancing of the transmission network. To this end, each shipper has an obligation to balance its injections of gas (imports, production, purchases at the gas exchange points* (PEGs) and withdrawals* from gas storage facilities*) and its withdrawals (consumption of its portfolio of customers, exports, sales at the PEGs and injections into the storage facilities).

2.2.1. A year after its creation, the operation of Powernext Gas has proved satisfactory

A specific platform, Balancing GRTgaz, managed by Powernext, was set up to enable players to propose offers of purchase and sale of gas to GRTgaz so that it could cover part of its balancing needs. A daily balancing price (P1) was established on the basis of these transactions, and has been used since the 1st of September 2007 to bill a part of the imbalances of each shipper.

Following the launch of an organised gas market in France by Powernext, in November 2008, the

FIGURE 2

SUBSCRIPTION RATES FOR ENTRY, OUTPUT AND LINK CAPACITIES FOR THE FIRST HALF OF 2010 (AT 31 DECEMBER 2009)

Source: CRE

Concertation Gaz group put the convergence of the two platforms on its agenda for its work in the 1st half of 2009 in order to focus liquidity and prevent an excess of gas price references in France. The GRTgaz methods of intervention on Powernext Gas Spot and the most appropriate reference price for billing the shippers' imbalances were defined.

The GRTgaz proposal for changes to the balancing rules on its network, resulting from the consultation work, was approved by the CRE in its proceedings on the 8th of October 2009.

Since the 1st of December 2009, GRTgaz has intervened on Powernext Gas Spot to cover part of its balancing needs. The methods of intervention have been adapted in order to prevent any risks of a drift in the GRTgaz balancing costs. The GRTgaz intervention ranges have been changed so that it can benefit from the higher level of liquidity noted during the day on Powernext Gas Spot and restrictions on the prices of offers selected by GRTgaz have been introduced.

2.2.2. The balancing tolerance has been redistributed in favour of the South zone

GRTgaz proposed to the CRE that there should be a change in the balancing tolerances [23] offered to shippers when the new tariff for use of the natural gas transmission network came into force on the 1st of January 2009, and applicable from that date, making balancing them easier within the new two zone structure on the GRTgaz network.

Analysis of shipper behaviour in the past led GRTgaz to adjust the level of tolerance to the needs of shippers for each balancing zone according to the delivery capacities to which they had subscribed. The new standard daily tolerances are indicated in TABLE 2.

This distribution of tolerances between shippers meets the demands of shippers on two points: it provides greater possible abundance for the new entrants and it takes into account the fact that balancing is more difficult in the South zone.

Furthermore, this change was made without increasing the overall tolerance offered by GRTgaz, and therefore kept costs borne by GRTgaz for balancing its transmission network at the level of the costs covered by the routing tariff in force on the 1st of January 2009.

2.3. The Concertation Gaz group on the transmission networks has produced its first results

GRTgaz and TIGF are co-chairs of the Concertation Gaz group [24] on the rules for access to the natural gas transmission network, made up of the steering committee and working groups. The participants represent the different categories of users of the natural gas transmission networks: suppliers, traders, end

(23) The subscription for delivery capacities at the exit of the GRTgaz network, directly to industrial customers or to transmission/distribution interface points* (PITD), gives the right, as a standard, to each shipper, to a daily tolerance, expressed in MWh/d, beyond which imbalances are invoiced at a penalty price.
(24) CRE deliberation of the 18th of September 2008.

TABLE 2
CHANGE IN DAILY BALANCING TOLERANCES AT 1st JANUARY 2009 ON THE GRTgaz TRANSMISSION NETWORK

Zones	Subscribed delivery capacity thresholds				
	Up to 0.5 GWh/d	From 0.5 to 1 GWh/d	From 1 to 2 GWh/d	From 2 to 50 GWh/d	Above 50 GWh/d
	Standard daily tolerance up to 31st December 2008				
All zones	+/- 20%	+/- 20%	+/- 5%	+/- 5%	+/- 5%
	Standard daily tolerance from 1st January 2009				
North L Zone	+/- 30%	+/- 20%	+/- 5%	+/- 5%	+/- 5%
North H Zone			+/- 20%		+/- 4.5%
South Zone				+/- 5.5%	+/- 5%

Source: CRE

customers, electricity generators* using natural gas and adjacent infrastructure operators.

One of the working groups is considering a possible change to the structure of the French transmission network. In July 2009, after a public consultation, the CRE adopted guidelines simplifying access to the transmission network in order to facilitate the emergence of a liquid marketplace in the south of France. These guidelines, which are based on the equalization of prices between TIGF and GRTgaz South zone, would have led to not including this capacity in the open season for 2013. Nevertheless, the 2013 and 2015 open seasons were launched with the existing transmission structure. In return, the Minister for Energy asked GRTgaz and TIGF to carry out a joint study in order to determine any possible congestion on the basis of a shared model and to describe the flow scenarios for the next few years.

2.4. The question of access of the electricity power plants to the natural gas transmission networks is strategic

Since 2006, GRTgaz and TIGF have received connection requests from many projects for gas-fired electricity power plants, in particular gas-fired combined cycle power plants* (FIGURE 3 p. 33). The high levels of gas consumption and the needs for day-to-day flexibility of these power plants impose operating restrictions on gas transmission networks.

In its proceedings of the 30th of April 2009, the CRE asked GRTgaz and TIGF to carry out a technical and economic study of capacity of all of the gas infrastructures to provide the intraday flexibility required by electricity power plants. In addition, it decided to maintain daily balancing on the French transmission networks.

GRTgaz and TIGF presented the results of their study to the Concertation Gaz group in the second half of 2009.

The study shows that the current consumptions in the H zones (25) of GRTgaz and in the TIGF zone fluctuate during the day depending on the temperature and the activity of the day in question, according to a flow profile of less than the daily average flow by about 11% during the night and more than the daily average flow by about 13% during the day. In the case of GRTgaz, in winter, the load-balancing* required on the grid is 85% covered on average by the line pack* and 15% by the intraday variations in withdrawals from the Storengy storage facilities. In summer, the GRTgaz line pack is sufficient to satisfy the needs for load-balancing of consumptions. In the case of TIGF, the load-balancing required by the current network consumption is mainly covered by using storage facilities. This is due to its over-dimensioning for the TIGF zone alone, its position at the barycentre of the zone and its operating conditions.

The second part of the study confirms the high intraday load-balancing of electricity power plant consumptions.

In practice, until 2013, the infrastructures in service or decided for the GRTgaz network will satisfy market

(25) There are two different types of natural gas: L gas (low calorific value), distributed in the North of France and H gas (high calorific value), distributed in the rest of the country.

BOX 2
THE *COMMISSION NATIONALE DU DÉBAT PUBLIC* BECOMES INVOLVED IN THE PROJECTS RELATED TO THE CORE NETWORK

In 2009, two public debates were held about "core grid" projects: Eridan (or the Rhone artery) and Arc de Dierrey. Given the impacts on the environment and economies of the regions concerned, the National Commission for Public Debate (CNDP) decided to organise public debates. The CRE presented the issues concerning the routing of natural gas in France in years to come. The report on the public debate about the Eridan project, published by the CNDP in January 2010, highlights the good level of the exchanges between GRTgaz and the people concerned by the project. The relevance of the project was rarely challenged. The principle recommendations made to the main contractor concerned the conditions for realising the work, the access to the plots crossed, the restoration of the land, the compensation conditions, the need to ensure the project is coherent with the other infrastructures and pursuing the dialogue. GRTgaz has three months, starting from January 2010, to make public its decision on whether or not to continue with its project.

need for intraday load-balancing most of the time: the balance will be ensured by increasingly resorting to working line pack in summer and by the growth in calls on other infrastructures (terminals, storage facilities and TIGF) throughout the year. Conversely in 2015, the frequency with which all needs are covered will be of around 80% on average over the year and 60% in October-November. Therefore, on average over the year, market needs may not be totally covered one day out of five. The development of the planned new infrastructures, in particular the doubling of the Rhone artery, will provide the necessary additional intraday flexibility for covering the needs of the new power plants. Furthermore, in the absence of significant emission at the Fos-Cavaou LNG terminal*, in the short term, and the doubling of the Rhone artery, in the medium term, the transfer of flexibility to the Fos zone will be limited and the load-balancing of this zone's consumptions will not entirely benefit from the flexibility available on the network.

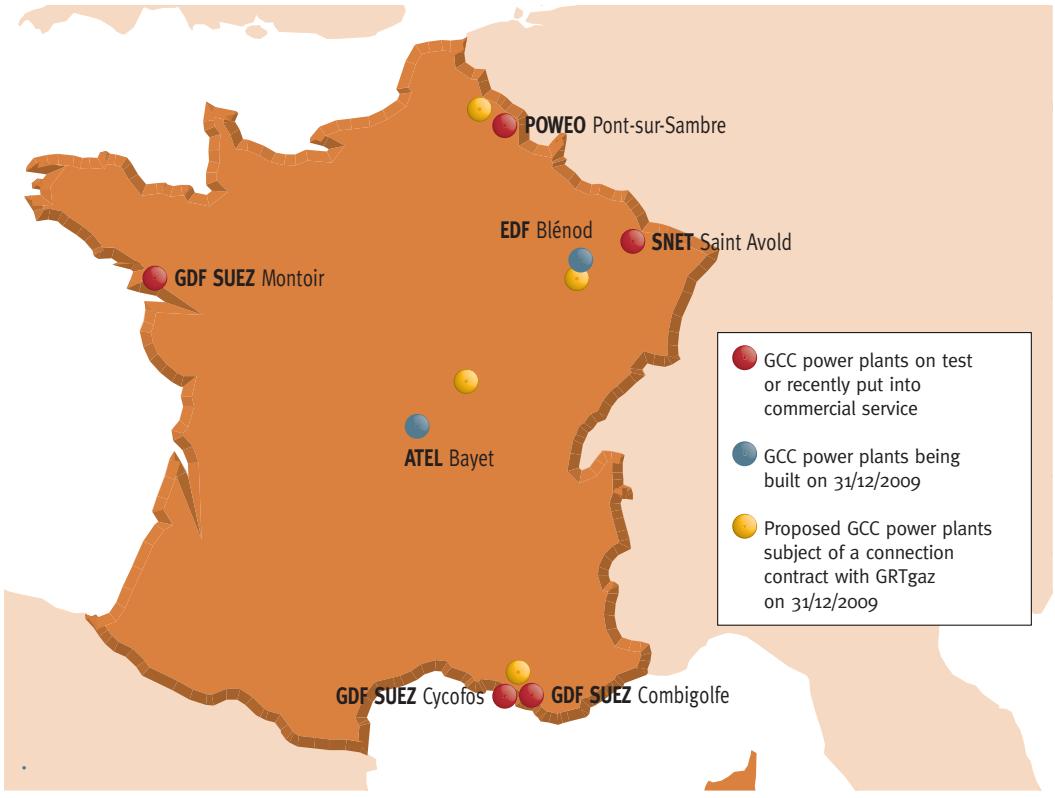
On the TIGF network, given that there is no electricity power plant project before 2013, a capacity for the transfer of flexibility from TIGF to GRTgaz from 2010 to 2013 will contribute to covering flexibility, when this is lacking, in the Fos-sur-Mer zone. However, the commissioning of the first power plant in the TIGF zone in 2013 should not be problematic, thanks to the Béarn artery and the two-way operation [26] of the interconnection at Larrau. From 2015 onwards, the intraday flexibility available from the storage facilities in the TIGF zone will ensure the coverage of the needs of two additional power plants, provided that there are developments to the Guyenne artery and the Lussagnet compression station*, and that the Gascony artery is tripled.

In the first half of 2010, the Concertation Gaz group will define electricity power plant methods of access

(26) The development of the interconnection with Spain at Larrau will allow the circulation of gas flows in both directions at this point from November 2010.

FIGURE 3

LOCATION OF GAS COMBINED CYCLE (GCC) PROJECTS THAT HAVE SIGNED CONNECTION CONTRACTS WITH GRTgaz



Source: CRE

to the gas transport network, taking into account the results of the study of the network carried out by the TSOs.

2.5. LNG terminals are subject to regulation

The CRE has made public its doctrine concerning the processing of requests for exemption from third party access* (see part 4 of the report at 3.1. p.59) and on the setting of the tariffs for use of regulated terminals.

2.5.1. Fos-Tonkin capacities to be allocated

On the 15th of September 2009, Elengy, the GDF SUEZ subsidiary responsible for 70.2% of the operating and developing activity of Montoir, Fos-Tonkin and Fos-Cavaou LNG terminals, launched an open season for extending the commercial operation of Fos-Tonkin terminal beyond 2014 to 7 Gm³/year.

The capacity allocation process should terminate in mid April 2010.

The Fos-Tonkin terminal has a regasification capacity of 7 Gm³/year. This will be reduced to 5.5 Gm³/year after the Fos-Cavaou terminal comes into service.

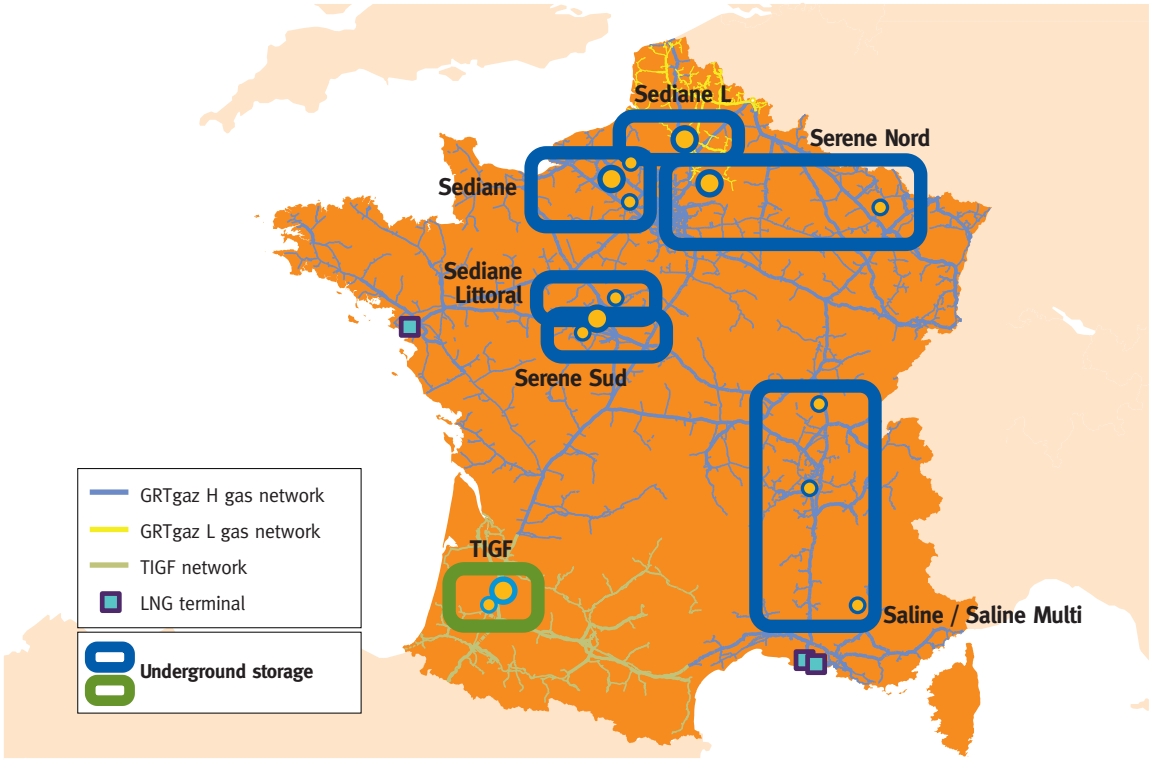
Two extension scenarios are being considered, depending on market demand: a 7 Gm³/year project and a 5.5 Gm³/year.

At the end of the open season, the CRE will rule on the characteristics of the tariff for the Fos-Tonkin terminal, including on how to deal with any overruns in cost or lead-time.

2.5.2. The Fos-Cavaou terminal is now in service

The Fos-Cavaou LNG terminal, managed by STMFC, a joint subsidiary of Elengy (71.2%) and Total (28.8%),

FIGURE 4
NATURAL GAS STORAGE FACILITIES IN FRANCE



Sources: Storengy, TIGF

received, on the 26th of October, its first LNG ship for cooling its installations. The terminal was brought into service on the 1st of April 2010, an event that had been delayed several times.

The prefectoral decree authorising the operation of the Fos-Cavaou LNG terminal was annulled on the 3rd of July by the administrative court of Marseille.

On the 6th of October 2009, a temporary operating permit limited the emissions issuing from the terminal to 20% of the total emissions capacity (8.25 Gm^3/year) and the frequency of receiving ships to two per month on average.

By virtue of the decree of the 20th of October 2009, the tariff for using Fos-Cavaou was applied as soon as it was brought into service on the 1st of April 2010. This tariff was calculated from the level of subscriptions known when it was drawn up. Its average unit level is €1.65/MWh (see part 4 of the report at 1.2.2.3. p. 48).

2.6. The use of natural gas storage facilities shows a positive result

The storage capacity in France (140.3 TWh) represents about 28% of national annual consumption.

Directive 2003/55/CE of the 26th of June 2003 leaves Member States free to choose between regulated access (tariffs and access methods fixed by an independent regulator) to the storage installations and the line pack and negotiated access (tariffs and access methods fixed by the operators). The law of the 9th of August 2004 chose a negotiated access.

On the 31st of December 2009, the underground storage facilities in France were operated by two operators: Storengy (a 100% subsidiary of GDF SUEZ) and TIGF (subsidiary of the Total group). Storengy operates 12 sites in France split into seven groups on the GRTgaz grid, representing a capacity of 9.6 Gm^3 of natural gas (111.4 TWh). TIGF has two storage facilities in south-west France (TIGF network) representing a capacity of 2.4 Gm^3 of natural gas (28.9 TWh)

FIGURE 4 p. 34.

For the 2009-2010 period, on the 1st of November 2009, the various new entrant suppliers (27) had a share of 13.1% in the storage capacities, an increase of 3.1% compared to November 2008.

For the April 2009 to March 2010 storage year, Storengy adapted its offer to take into account the new structure of the gas transmission network comprising three zones: the six old storage facility groups were replaced by seven new groups.

The Storengy procedure for allocating storage rights also changed, so that a shipper that does not have rights can participate in the allocation process and subscribe in the form of restorable capacities. These are no longer sold in the form of auctions but at the price of the basic offer.

In the case of the remainder of storage capacities, TIGF puts them back on the market in the form of auctions, but now on an annual rather than a pluriannual basis. The capacities sold were of 415 GWh.

The underground storage facilities* were regularly called upon in 2009. Subscriptions were taken out up to 99% of the marketable capacities. Only 200 GWh were not subscribed to at the Storengy Salin group.

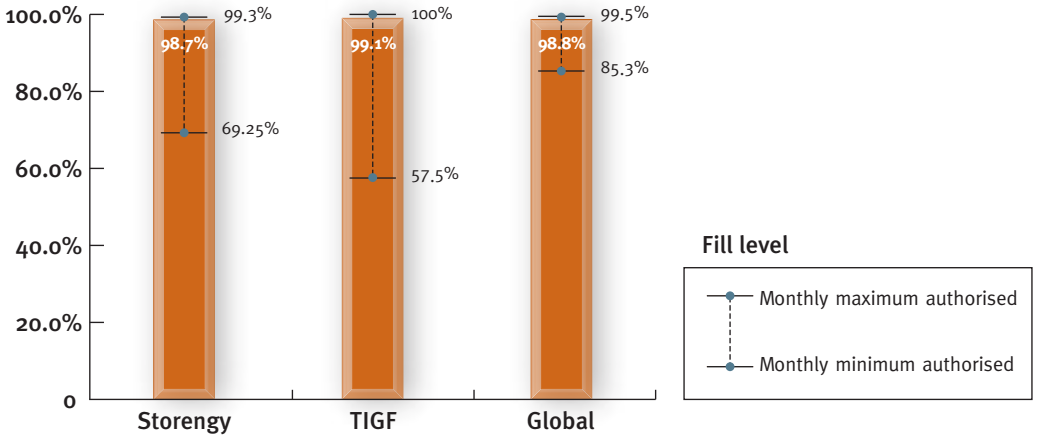
In January 2009, massive use of the storage groups provided a partial response to the increase in demand for gas related to both the sudden drop in deliveries of Russian gas and the cold spell.

In the first days of the crisis, the Salins Sud storage groups covered 45% of the increase in requirements for gas. At the end of the crisis, the filling rate of the storage facilities reached 54% on average, as against 59% for the preceding year. These levels of gas in stock are still above the floor level required by storage facility operators.

At the start of the winter period, the filling rate of storage facilities reached 98.8% FIGURE 5.

(27) All suppliers except Total, GDF Suez and the LDCs.

FIGURE 5
GAS STORAGE FACILITY FILL LEVEL (NOVEMBER 2009)



Sources: DSOs, suppliers

3. GDF SUEZ has given an undertaking to the European Commission to limit its share of the long-term entry capacities in France to 50%

On the 8th of July 2009, GDF SUEZ gave an undertaking to the European Union Directorate General of Competition (DG COMP) that it would limit its share of the long-term capacities (period greater than one year) on entry to the French natural gas transmission networks to 50%, starting in 2014 and for a period of ten years. After a market test carried out by the Commission, these undertakings were approved and made legally binding on the 3rd of December 2009.

Proposed on a voluntary basis by GDF SUEZ, they are the consequence of a breach procedure instigated by the DG COMP on suspicion of practices that could prevent or restrict competition on the upstream natural gas supply markets in France, in particular by the long-term reservation of gas transmission capacities.

The European Commission charged the CRE with the definition and implementation of these structural commitments for access to the gas market in France.

On the 1st of October, GDF SUEZ will return part of the long-term entry capacities at the Obergailbach and Taisnières H land interconnection points as well as at the Montoir-de-Bretagne LNG terminal. Similarly, long-term access capacities will be put up for sale at the Fos-Cavaou terminal from the 1st of January 2011. These returns, organised at the start of 2010, will be accompanied by the option of obtaining an equivalent capacity on the upstream transmission networks in Germany, Belgium and on the Interconnector gas pipeline that connects the United Kingdom to Belgium.

CRE proceedings of the 4th of February 2010 specified rules for allocating firm capacities put back on the market by GRTgaz and Elengy in application of the GDF SUEZ undertakings. The marketing of the GRTgaz capacities was carried out on the 9th of February and the 5th of March 2010. The Elengy capacities were put up for sale between the 15th of February and the 5th of March 2010.

The limitation of the long-term entry capacities held by GDF SUEZ to 50% is a determining factor for the opening up of the market and the development of competition in France to the benefit of the end consumers.

4

Regulation: serving **investment** and **quality**

*Words followed by * are defined in the glossary p. 113*

1. The new tariffs for use of electricity grids and gas networks and infrastructures guarantee the right level of investment

1.1. The tariffs for use of electricity grids boost investment

1.1.1. The new tariffs for use of electricity grids were approved and came into force on the 1st of August 2009

The third round of tariffs for use of the public electricity transmission and distribution grids* (TURPE 3) came into force on the 1st of August 2009, under a ministerial Order. The tariff for use of the public electricity transmission grid increased by 2%, and that for public distribution grids by 3%.

From 2010 to 2012, every 1st of August, the change in tariffs will be indexed on the inflation rate:

- plus 0.4% for transmission and 1.3% for distribution,
- plus (or less) a reconciliation factor for the expense and revenue clawback account* of up to ± 2% BOX 3.

1.1.1.1. The new tariffs give operators visibility while allowing the necessary adjustments

A tariff indexing mechanism, combined with an application period of four years, guarantees transmission system operators* (TSO) and distribution system operators* (DSO) better visibility of the trend in their revenues, thus encouraging renewed investment.

Indeed, network operators are expected to significantly increase their investment over the 2009-2012 period. While investment over the 2006-2008 period amounted to €1.84B for ERDF and €0.75B for RTE, the estimated amounts over the 2009-2012 period used in drawing up TURPE 3 are €2.97B (+62%) and €1.18B (+57%).

BOX 3
THE EXPENSE AND REVENUE CLAWBACK ACCOUNT

The CRE sets its tariffs on the basis of assumptions about short and medium-term changes in system operators' costs and revenues. However, certain categories of expenses and revenues are difficult to forecast and/or control. If tariffs couldn't be adjusted, public network operators would be exposed to a financial risk or could, on the contrary, benefit from external factors which would increase their returns. It is therefore justifiable to compensate network operators for deficits, through a tariff adjustment, or to return any surpluses to network users.

To achieve this, the CRE has renewed the expense and revenue clawback account, introduced under TURPE 2, in order to measure and compensate for the differences between performance and the forecasts used in drawing up TURPE 3, for previously identified items (including capital expenses, the cost of purchasing network losses* and the volume risk concerning tariff revenues).

This sharp increase in investment needs is due to the considerable effort needed to reduce the average duration of cuts on distribution grids and to the growth in needs for connection* and upgrading, resulting from a new electricity generation development cycle and the emergence of renewable energy* production.

FIGURE 6 shows the annual forecast investment assumed in drawing up TURPE 3, compared with that financed by RTE and ERDF over the 2006-2008 period.

If investment requirements proved to be higher than those initially expected when drawing up TURPE 3 then, when indexing the annual tariff, the expense and revenue clawback account mechanism would take into account the difference between the investments actually made and those initially planned.

1.1.1.2. The distribution tariff takes account of the objectives of energy demand management thanks to time-of-use differentiation

In order to get more users to opt for a time-of-use tariff, thus encouraging consumption outside peak periods, time-of-day and seasonal load balancing* of tariffs for using distribution grids has been stepped up.

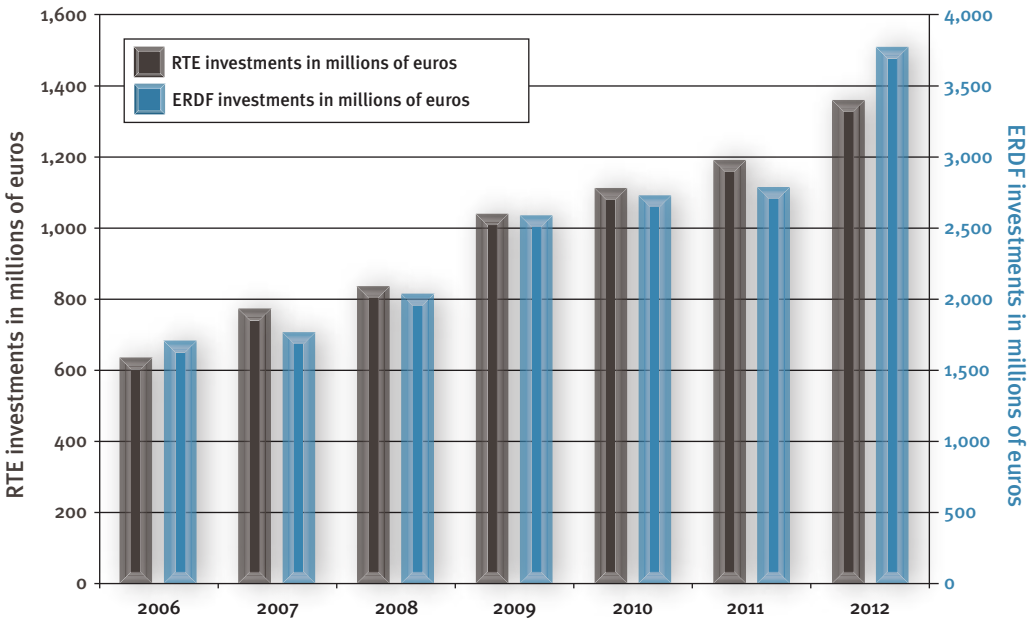
These changes were made to reconcile the principle of non-discrimination of tariffs set out in part II of Article 4 of the law of the 10th of February 2000 with the desire to manage energy demand referred to in part IV of the same article.

They are based on an objective criterion, namely the increase noted in recent years of the time-of-day and seasonal differentiation of market prices and therefore of the cost of purchasing energy losses.

1.1.2. The regulator ensures that necessary investment in transmission grids is planned and carried out

According to Article 14 of the amended 10th of February 2000 Act, the RTE investment programme "is subject to approval by the CRE which ensures that the investments necessary for the proper development of grids are carried out and that access to them is free of discrimination".

FIGURE 6
FORECAST ANNUAL INVESTMENTS TAKEN INTO ACCOUNT WHEN PREPARING TURPE 3 COMPARED WITH THOSE FINANCED BY RTE AND ERDF OVER THE 2006-2008 PERIOD



Sources: ERDF, RTE

The CRE thus bases its decision on the transparent, non-discriminatory treatment of market players by RTE, especially electricity generators*, on the development of cross-border connections justified by European integration, as well as on long-term viability and performance of the grid.

1.1.2.1. The increase in the level of investment in the transmission grid is confirmed

The investment programme presented by RTE and approved by the CRE for 2010 amounts to €1.116B and comes as part of ongoing improvement aimed at responding to the issues of integration of the European electricity market, the development of power plants and renewal of facilities.

The development of the fleet of French power plants requires considerable investment in the transmission grid to ensure that future generating facilities will be connected and to make the upgrades necessary to deal with the congestion* caused by the development of French power plants.

It is in the north of France and the Fos area that there is the greatest need to adapt the upstream network. According to studies carried out on the north of France, network upgrades will take place until 2010. With the prospect of extra generation in this area, the grid also needs to be adapted. Prospects are similar for RTE projects in the Fos area, where work is due to start in 2010.

The age pyramid of facilities can be explained by the large-scale development of the electricity transmission grid in the 1970s and 1980s. Consequently, RTE will have to noticeably increase the level of renewal spending in coming decades. The renewal investment budget reaches €321M in 2010 TABLE 3.

In addition, the fragile situation in the PACA region and the Brittany electricity grid requires special attention. For the PACA region, RTE has presented a series of grid adaptation measures, to be implemented by 2015, to improve the region's security of supply on the long term. Brittany's electricity supply comes from generation sites which are far away, making it an electric peninsula. In 2010, RTE will continue work on improving the electricity supply in the south of Brittany. But it is also a fact that Brittany's supply depends on the continuing availability of existing power plants and the development of regional generation.

1.1.2.2. The development of interconnection infrastructures must continue

The interconnections* between France and neighbouring countries help to improve network operating security (enabling TSOs to provide mutual assistance in the event of system failure) as well as to contribute to the smooth operation of markets by encouraging international trading. This trading optimizes generation from the different sorts of power plant and plays a part in minimizing generation costs and reducing CO_2 emissions.

TABLE 3
2010 RTE INVESTMENT PROGRAMME, APPROVED BY CRE

	2009	2010
Main Transmission Grid and Interconnections – Development	€215.9M	**€297.8M**
Main Transmission Grid and Interconnections – Renewal	€66.6M	**€60.8M**
Regional Grids – Development	€324.9M	**€352.1M**
Regional Grids – Renewal	€261.5M	**€260.0M**
Work on Transmission Grids	€3.5M	**€2.6M**
Electricity system management tools	€76.3M	**€45.2M**
Market management tools	€42.8M	**€38.7M**
Logistics	€38.3M	**€58.9M**
Total	**€1,029.9M**	**€1,116.0M**

Source: RTE

For several years, the CRE has drawn attention to the lack of interconnection infrastructures and the necessity of greater cooperation with network operators in neighbouring countries. Thanks to RTE's efforts, investment projects to reduce interconnection congestion on the medium and long term have been started.

Interconnection upgrade spending amounts to €67M in 2010, mainly spent on continuing to optimise the existing France-Italy interconnection and the France-Spain interconnection by the east of the Pyrenees.

However, these efforts must be continued in 2010, in particular through studies on the possibility of increasing trading capacity with England.

The development of cross-border trading may also require upgrading the internal network upstream. The investment needed on this network should therefore be identified; otherwise efforts to develop interconnection infrastructures would only lead to limited gains in terms of trading capacities.

1.1.3. New projects were launched by the CRE in 2009

1.1.3.1. A working group has been commissioned to draw up a diagnosis of what different changes would be possible in the grid losses hedging system

The work on tariffs in 2008 has highlighted the extent of the impact of costs for compensating energy losses under TURPE. In their answers to the public consultations, a number of electricity market players spoke about ways to change methods for purchasing loss compensation energy.

In order to provide a basis for the decisions of public players and to start on preliminary studies for TURPE 4, the CRE formed a working group on the cover of electricity grid losses, chaired by Éric Dyèvre, a CRE commissioner.

This working group made a diagnosis of the different changes to the mechanism for covering losses that could be considered, while complying with European Commission rules. The steering committee, made up of leaders and experts representing the diversity of the players involved, guaranteed that the analyses and proposals took account of the interests of all the players in the electricity market [28].

During the work, it became apparent that a mechanism for covering losses answers the following two questions:
- which market player is responsible for purchasing the energy intended to compensate for losses?
- what are the conditions for purchasing losses?

The responsibility for the compensation of losses can be given, as is often the case in Europe, to network operators, or it could be the responsibility of generators* and/or suppliers*, as is the case in Spain, Italy, the United Kingdom and Portugal.

The timescale chosen for covering losses can also vary. In this respect, the members of the working group decided to distinguish available, liquid products on the wholesale market (spot*, M+1 to M+3, Q+1 to Q+4 and Y+1 to Y+3) from longer-term products.

Based on these assumptions, there are four models for covering losses to be studied; they depend on whether the responsibility for covering is given to network operators or generators/suppliers and whether the purchasing conditions are short term or long term.

The results of this analysis were published on the working group's web site in early 2010.

1.1.3.2. A working group was commissioned to provide a basis for future CRE decisions on the quality of supply on public electricity distribution grids

The CRE has regularly noted a deterioration in the quality of electricity* supply on public electricity distribution grids, with an increase in the average length of power cuts.

This is why, when TURPE 3 was being drawn up, it was the most ambitious scenario proposed by ERDF, involving an additional 20% in investment for quality of supply over the 2009-2013 period, which was chosen. At the same time, under the incentive-based regulation system, the CRE introduced a reward and

(28) Players not directly participating in the workgroup were able to provide their contributions through the dedicated Internet site on which they were published: http://gtpe.cre.fr/. This site also gives access to all the supporting documents for the different meetings (agendas, notes, presentations and minutes).

penalty mechanism, based on the average length of power cuts.

However, these measures will probably not be enough in the next few years. In order to provide a basis for its future decisions, the CRE formed a working group on the quality of electricity distribution, made up of a steering committee including the two CRE vice-presidents, Michel Lapeyre and Maurice Méda, assisted by CRE departments.

The working group focused its investigations on continuity of supply on the medium and low voltage networks. Its analysis concentrates on the deterioration in continuity of supply on public distribution grids in normal situations and on how robust the grids are when faced with exceptional climate events. The working group's field of investigation does not cover the quality of service provided by the DSO or the quality of the voltage wave, since these are related to other issues.

The working group heard a large number of stakeholders representating electricity sector industrialists, authorities organising public electricity distribution and their representative federation, several grid operators and their representative organisations and trade union organisations representing employees of the main DSO. The working group made a number of field visits, in the areas of the Aube, Côtes d'Armor, Dordogne, Drôme, Eure and Oise, in order to see for itself the difficulties encountered locally by these regions [29].

1.1.3.3. An analysis of the tariff structure was initiated in order to address the objectives of controlling demand more effectively

In the preamble for its tariff proposal of the 26th of February 2009, the CRE reaffirms its intention to examine the tariff structure, with the intention of completing the work within two years.

It is important that the TURPE structure should encourage users to control their demand during the periods of highest consumption, without being discriminatory. By including network costs related to the level of consumption in the tariffs, the CRE meets these two goals. The studies carried out by the CRE will determine if the trend in the cost structure justifies introducing a time-of-use differentiation in transmission tariffs and increasing the time-of-use differentiation in distribution tariffs. In 2010, the CRE will hold a public consultation on this question.

1.2. Investments have an impact on tariffs for use of gas infrastructures and networks

1.2.1. The regulator ensures that necessary transmission network investment is scheduled and carried out

1.2.1.1. A report on the implementation of the 2009 investment programmes was drawn up

CRE decisions on gas TSO investment programmes are based on the following considerations:
- projects or studies necessary for smooth market operation included in the investment programme,
- transparent, non-discriminatory treatment of market players,
- cost control of the projects contained in investment programmes. On the 18th of December 2008, the CRE approved the annual investment programmes of the natural gas TSOs, GRTgaz and TIGF, amounting to €659M and €90M, respectively.

On the 10th of September 2009, GRTgaz and TIGF presented a report to the CRE on the performance of their investment programmes for the first half of 2009. GRTgaz estimated investment spending would amount to €655M, a reduction of €4M. TIGF records estimated investment spending of €81M, a drop of €9M, mainly concerning the Guyenne artery project (-€6M), where some of the work was completed as early as 2008.

Despite this reduction in 2009, the total cost of the Guyenne artery project has risen sharply since 2008, which can be explained by the significant increase in spending on engineering, materials and civil engineering, compliance with new safety and environmental statutory obligations and anticipation of phase 2 of the development of this artery. This is why the CRE will start an audit of phase 1 of the project during the 1st half of 2010.

(29) All the information on the workgroup's activity is gathered on a dedicated Internet site: http://qualite.cre.fr/.

1.2.1.2. Natural gas transmission system operators' 2010 annual investment programmes have been approved

On the 17th of December 2009, the CRE approved the annual investment programmes of the TSOs GRTgaz and TIGF.

> GRTgaz 2010 annual investment programmes

The GRTgaz 2010 investment programme amounts to €629M [30]. It includes the development of capacities between France and Spain, as well as between the TIGF and GRTgaz networks, as a result of the open season* of the 2nd half of 2009, enabling GRTgaz to undertake corresponding investments in 2010.

The majority of spending is earmarked for main network development projects (€139M) and projects to upgrade plant physical safety and the renewal of obsolete assets (€199M). The sums planned in 2010 for the development of the main network are lower than in previous years. This can be explained by the completion of two projects in 2010: the creation of the GRTgaz North major balancing zone* and the development of entry capacity at Fos and Obergailbach.

GRTgaz is also planning large investments in 2010 for main network development projects in preparation for the interconnection with Belgium, the connection of the Dunkirk terminal and the doubling of the Rhone artery. These projects will improve security of supply, contribute to the integration of Iberian, French and north-European markets and encourage the development of competition. If they are completed, they will represent spending of around €2B between 2010 and 2015.

> TIGF 2010 annual investment programmes

The TIGF 2010 investment programme amounts to €77M [31].

A majority of the spending is earmarked for main network development projects (€27M) and projects to upgrade plant physical safety (€28M).

In 2009, TIGF completed the investment necessary for the first phase of development of the Guyenne artery to increase capacities between the TIGF and GRTgaz networks.

The principal investments in main network development in the 2010 programme involve the upgrading of the Béarn and Guyenne arteries [32] and the "Lacal Reversibility [33]" project (at the Larrau interconnection point) FIGURE 7 p. 45.

1.2.1.3. The TSOs GRTgaz and TIGF have presented their indicative ten-year plans

In France, the ten-year plans of GRTgaz (published in September 2009) and TIGF amount to €6.4B and €1.1B respectively.

The GRTgaz programme shows an increase compared with the previous year (+€1B), mainly due to an increase in investments to secure the network (+€392M) [34] and in trade facilitation investments (+€813M) [35].

The TIGF programme shows a significant drop (-€0.7B). This can be explained by the completion of phase 1 of the Guyenne artery and the shelving of the Verdon LNG terminal* connection. Uncertainty also persists as regards 60% of the next ten years' investments.

The GRTgaz and TIGF programmes include projects which are important for the development of capacities at entry points* (interconnections and LNG terminals). These projects will help make the market more fluid as well as secure supply in France and enable shippers* to make a choice between several sources of gas supply in order to be able to improve their offers to end customers.

With the same idea, and at the request of the General Directorate for Energy and Climate (DGEC) and under CRE control, TIGF and GRTgaz have, since the last quarter of 2009, been carrying out a study on the

(30) A 5% fall compared to the programme approved for 2009.
(31) A 15% fall compared to the programme approved for 2009.
(32) Induced by the results of the open season on the development of marketable capacities from the 1st of April 2013 between France and Spain. The final investment decision by the TIGF board was taken on 29/01/2010.
(33) Project decided before 2009, which will result, as of the 1st of November 2010, in the creation of firm entry capacities from Spain to France at the Larrau interconnection (30 GWh/d in winter and 50 GWh/d in summer or about 1 Gm^3/year).
(34) This increase is linked to the publication in mid-2009 of guides defining the methods of application of the Order of the 4th of August 2006.
(35) This increase is due to the 100% firming up of several liquidation projects and the integration of new development projects into the central programme.

structure of the French network, in order to assess the feasibility of setting interface terms of €0/MWh/day between the TIGF and GRTgaz South areas. The result of this study is expected by mid-2010.

> GRTgaz indicative ten-year investment plans

The main projects to upgrade gas entry points in the north area are part of the GRTgaz multi-year investment programme. They involve the upgrading of the Taisnières H interconnection in the Belgium-France direction and connection of the LNG terminal projects in the North area (Antifer and Dunkirk). GRTgaz is also planning network core development in the North area, necessary for carrying out these projects, the cost of which will be pooled.

Finally, the main projects to develop gas entry points in the South area are also contained in the GRTgaz multi-year investment programme.

The marketing of capacities on the north-south link has brought to light considerable contractual congestion from North to South. In order to progressively remove this congestion GRTgaz is planning, in its ten-year investment plan, to increase transport capacities by 200 GWh/day between its North area and South area in 2015, at a cost of €1.7B in 2009.

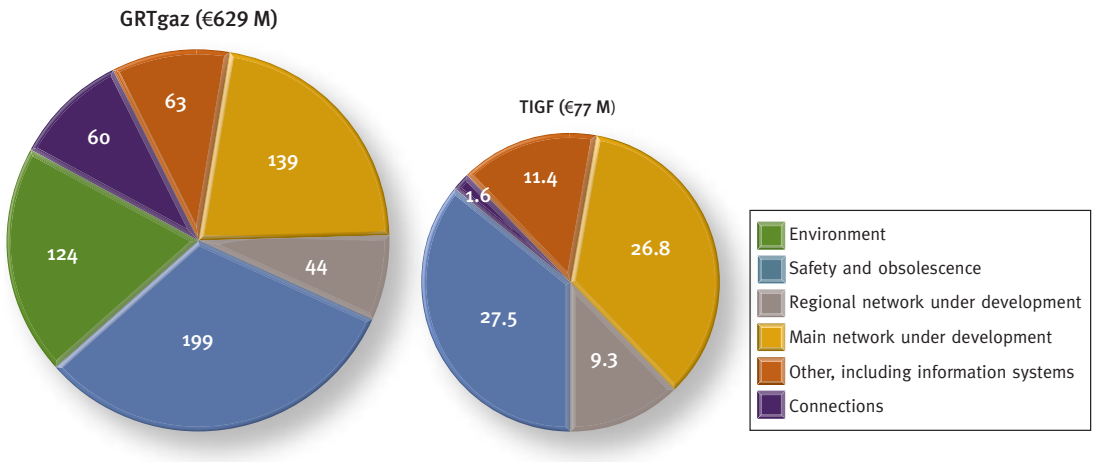
This ten-year plan also includes two items for developing interconnection capacities with Spain: development of capacities in both directions at Larrau in 2013 and the creation of an interconnection point at Le Perthus for 2015.

It also takes into account possible extension of the commercial operation of the Fos-Tonkin LNG terminal beyond 2014.

> TIGF indicative ten-year investment plans

The main projects for development of entry points for gas coming from Spain are contained in the TIGF multi-year investment programme, in accordance with the plan set out as part of the south regional initiative. This involves development of capacities in both directions at Larrau in 2013 and the creation of an interconnection point at Le Perthus for 2015.

FIGURE 7
GRTgaz AND TIGF 2010 INVESTMENT PROGRAMMES (IN €M)



Source: CRE

1.2.2. New tariffs have come into force...

1.2.2.1. ... on the 1st of July 2009, for local distribution companies

> Local distribution companies tariffs

On the 1st of July 2009, the new tariffs for use of natural gas distribution networks* of local distribution companies* (LDCs) came into force, referred to as ATRD3 tariffs, in compliance with the 24th of June 2009 Order. They are the result of a proposal made by the CRE to the Ministers for the Economy and Energy at the proceedings of the 2nd of April 2009.

Like the tariff applicable to GrDF, which came into force on the 1st of July 2008, the new gas distribution tariffs of the LDCs encourage the latter to control their costs and improve their quality of service, to the benefit of end users. Since these are multi-year tariffs, they give better visibility of tariff changes to all market players.

For the eight LDCs with special tariffs, these tariffs introduce a regulation framework identical to that stipulated for GrDF in its tariff. They reduce the risks borne by operators, with no change to the present tariff structure:

- the tariff application period is increased to four years, with a tariff list revised annually on the 1st of July, as of 2010, in proportion to inflation (CPI) and at an annual increase factor specific to each LDC. These factors of change on the tariff list assume an increase, as of 2010, of the net operating costs (OPEX) of each LDC with a specific tariff, in accordance with the annual percentages of change based on the levels used for 2009 TABLE 4,
- a financial incentive mechanism is introduced to improve the quality of service provided by each LDC (see part 4 of the report, 2.2. p. 57),
- a correction mechanism is set up (the expense and revenue clawback account), guaranteeing operators their expected transport revenues for the quantities of gas distributed. For certain previously identified items, it corrects the differences between expenses and real incomes and the expenses and forecast incomes used to set the tariff.

LDCs will keep 40% of any additional productivity gains they might make and the remaining 60% will go to network users.

The regulation framework applicable to the 14 LDCs not presenting separate accounts and which have a common tariff is similar, in its principles, to that

TABLE 4
ANNUAL TREND IN LDC TARIFF SCALES AND OPEX

Local distribution companies (LDC)	Annual tariff scale trends	Annual percentage variation in net OPEX	Total reduction in net OPEX over the 2010-2012 period
Régaz (Bordeaux)	CPI -0.7%	CPI -1.25%	-3.5%
Réseau GDS (Strasbourg)	CPI -0.7%	CPI +0.82%	-3.8%
Gaz Électricité de Grenoble	CPI -0.1%	CPI -2.80%	-3.4%
Vialis (Colmar)	CPI -2.0%	CPI -1.82%	-2.6%
Gédia (Dreux)	CPI -0.5%	CPI -1.21%	-3.5%
Caléo (Guebwiller)	CPI -1.3%	CPI -1.35%	0%
Gaz de Barr	CPI -0.2%	CPI -1.34%	-2.0%
Veolia Eau (Huningue, St Louis, Hégenheim, Village-Neuf)	CPI -1.0%	CPI -3.05%	-8.3%
14 LDCs with a common tariff	CPI -0.9%		

Source: CRE

applying to the other LDCs, but its conditions are simplified, in terms of the incentive-based service quality regulation mechanism.

Tariffs, expressed in current euros, changed on the 1st of July 2009 TABLE 5. A number of structural factors tend to push up LDC tariffs, which had not risen since the 1st of January 2006:
- rises in capital expenses (related to the accelerated removal of grey cast iron in 2006 and 2007),
- an increase in operating expenses (including the effect of the pension scheme for the electricity and gas industries),
- the change in the volumes of gas distributed and the number of customers connected, meaning that the cost rises described above can no longer be offset.

> *Tariff rules for new natural gas concessions*

The 24th of June 2009 Order, approving the CRE tariff proposal of the 2nd of April 2009, supplements the tariff rules introduced by the 2nd of June 2008 Order. These are applicable for the new natural gas concessions awarded after competitive bidding, which are no longer entitled to tariff equalisation, under Article 29 of the law no. 2006-1537 of the 7th of December 2006 concerning the energy sector, modifying part III of Article 7 of the law no. 2003-8 of the 3rd of January 2003.

The tariff rules set out a reference tariff structure, that of the current GrDF equalised tariff, applicable to all new concessions.

The estimated tariff level is defined by the DSO in the call for tenders for a new concession, by applying a single multiplying coefficient to the current GrDF tariff list.

A single date of annual non-equalised tariff changes is introduced. The tariff changes automatically on the 1st of July every year by the application of a percentage of change made up of indexes from a basket of change indexes common to all DSOs.

The annual change formula for non-equalised tariffs is negotiated between the DSOs and the concession awarding authorities. It must consist of families of indexes which are representative of transport cost control on the network of the DSO in charge of the new concession, the change in transport costs on the network of the upstream DSO, the cost of work and labour, construction costs of the new concession's network and/or the costs of services for operating the new concession's network.

Changes in the reference list structure are taken into account as soon as they come into force, in

TABLE 5
TRENDS IN LDC TARIFFS AT 1ST JULY 2009

Local distribution companies (LDC)	Trends in tariff at 1st July 2009
Régaz (Bordeaux)	+7.8%
Réseau GDS (Strasbourg)	+5.4%
Gaz Électricité de Grenoble	-2.9%
Vialis (Colmar)	+6.0%
Gédia (Dreux)	-3.4%
Caléo (Guebwiller)	-2.1%
Gaz de Barr	-2.4%
Veolia Eau (Huningue, St Louis, Hégenheim, Village-Neuf)	+9.6%
14 LDCs with a common tariff	+1.4%

Source: CRE

compliance with the rule for applying a single multiplying coefficient to the terms of the new reference list.

These tariff provisions facilitate access to natural gas distribution networks, data exchange between operators and suppliers, as well as the analysis of DSO offers by local authorities. They apply to all DSOs answering a call for tenders for a new concession.

In accordance with Article 7 of the 3rd of January 2003 Act, the CRE examines each new application and verifies that the DSO's estimated tariff complies with the reference tariff structure. On this basis, it proposes this tariff to the Ministers for the Economy and Energy.

1.2.2.2. ... on the 1st of July 2009, for the distributor GrDF

> Updating of the GrDF equalised tariff

The tariff for using GrDF public natural gas distribution networks, which came into force on the 1st of July 2008, provided for an annual change in the tariff list on the 1st of July 2009 by the application of the following change percentage: Z = CPI – 1.3%, applied to all tariff terms in force on the 30th of June 2009.

As the change in the CPI for 2008 was +2.8% (INSEE), the GrDF tariff list increased by 1.5% on the 1st of July 2009. It is applicable until the 30th of June 2010.

> Update of the incentive-based service quality regulation system of GrDF's equalised tariff

The GrDF incentive-based service quality regulation system was updated on the 1st of July 2009. Several new indicators were introduced, to give GrDF financial incentives to improve the quality of its services to suppliers and end users.

The modifications made are based on the report on the system which came into force on the 1st of July 2008 and research carried out by the Gas working group (GTG), which identified new areas for improvement in GrDF processes:

- implementation of four new indicators, two of which have financial incentives, as of the 1st of July 2009 or during the tariff period,
- implementation of financial incentives for the three indicators monitoring OMEGA meter reading publication rates [36] and reassessment of the goals of the indicator monitoring the OMEGA portal availability rate,
- details on six indicators monitoring service performance times,
- removal of three indicators on OMEGA publication times.

1.2.2.3. ... on the 1st of January 2010, for LNG terminal access tariffs

The 20th of October 2009 Order approved the new tariffs for use of the Fos-Cavaou, Fos-Tonkin and Montoir LNG terminals, proposed to the government by the CRE on the 24th of July 2009.

These tariffs were applied on the 1st of January 2010, for a three-year period, for the Fos-Cavaou and Montoir LNG terminals; they have been applied to the Fos-Cavaou terminal since it came into operation on the 1st of April 2010. They are designed to encourage the development of new regasification capacities, as well as the arrival of new shippers at French LNG terminals.

In this context, compared with the previous tariff (ATTM2), the major changes introduced are:

- individual tariffs for each LNG terminal, in order to deal with the specific changes to each of these infrastructures,
- a tariff period increased to three years,
- an expense and revenue clawback account to correct the differences between the amounts actually recorded and the forecast amounts, for certain difficult-to-forecast expenses and incomes. These differences are then used in setting the following tariffs,
- a mechanism for investment incentives through a new asset remuneration system,
- two incentive mechanisms which share gains between the terminal operator and users, to encourage terminal operators to reduce their costs and market the whole of their regasification capacity,

(36) OMEGA: GrDF information system for managing transmission data and associated customer processes, providing communication between the DSO and the suppliers (all supplier requests must pass through the OMEGA Suppliers portal) via a secure Internet site.

- improvement in the use-it-or-lose-it* (UIOLI) mechanism with more frequent updating of unloading slot availability and subsequent control by the CRE,
- more flexibility in regasification services by extending access to the continuous emission service by setting up additional services for bringing forward or delaying emissions relative to the planned emission date, once unloading has taken place.

Average single tariffs are €0.90 /MWh for Montoir and €1.14 /MWh for Fos-Tonkin. The rise compared with the last tariff, which came into force on the 1st of January 2006, can be explained mainly by the costs generated by the creation of the subsidiary Elengy, an increase in renovation investments and, in the case of the Fos-Tonkin terminal, a drop in subscriptions due to the start up of the Fos-Cavaou terminal. The average single tariff for Fos Cavaou is €1.65/MWh, in accordance with the level announced by the CRE in its July 2008 public consultation.

> The asset remuneration system

Remuneration of assets is maintained at a real, pre-tax rate of 9.25%, i.e. the transmission remuneration rate, 7.25%, plus a bonus of 200 basis points.

> Investment incentives

For the extensions of existing LNG terminals and new terminals, provided that the increase in regasification capacity represents at least 20% of initial infrastructure capacity and the new capacity created is allocated under conditions previously approved by the CRE:

- the method for calculating the remuneration rate is set for 20 years and corresponds to the base rate applicable to natural gas transmission assets, which can change over the period according to future tariff decisions on transport on natural gas networks, plus a bonus of 200 basis points specific to liquefied natural gas* (LNG),
- a further bonus of 200 basis points is granted for ten years.

1.2.2.4. ... on the 1st of April 2010, for the GRTgaz tariff

In accordance with the conditions set out in the 6th of October 2008 Order, a rise averaging 3.9% in the GRTgaz tariff scales will come into force on the 1st of April 2010. This tariff increase will cover all GRTgaz expenses in 2010. It would have been 2.9% if it had been applied as of the 1st of January, which can be explained by the following two points:

- the GRTgaz 2010 authorised revenue increase is 2.4% above that of 2009. This rise is below the average rise of 4.6% over the 2010-2012 period anticipated in the 6th of October 2008 Order. This difference is due to lower inflation in 2009 than that assumed in the Order and also a drop in energy costs,
- given the repercussions of the economic crisis, noted on transmission capacity subscriptions in 2009, and future prospects for coming out of the crisis, capacity subscription forecasts for 2010 have been reduced by 0.5% compared with assumptions for 2009, whereas a rise was initially expected, due to the commissioning of several gas-fired power plants.

This tariff rise in 2010 is close to the annual average increase of 2.8% between 2010 and 2012 expected in the presentation of the rationale for the CRE tariff proposal of the 10th of July 2008.

1.2.3. Bio-methane injection into natural gas distribution networks is being studied

Studies are currently being carried out on projects for bio-methane* injection into natural gas distribution networks, the most advanced of which could be completed during 2010. The presentation of the rationale for the transport transmission tariff in force stipulates that DSOs can offer a technical injection service on an experimental, temporary basis.

2. Incentive-based regulation encourages system operators to improve their efficiency, for gas as well as for electricity

Tariffs for use of electricity grids and gas networks and infrastructures introduce a regulatory framework encouraging operators to improve efficiency by cost control. However, in order to improve the level of quality provided by operators and prevent any deterioration which could result from the productivity

drive required of them, an incentive-based quality regulation mechanism has been introduced for all gas network operators and for the electricity grid operators RTE and ERDF.

2.1. In electricity, TURPE provides a financial incentive for quality of service

2.1.1. Quality of service for users is a priority

Under TURPE, the CRE introduced a mechanism for regulating quality of supply. At this stage, there are only financial incentives (bonus/penalty) for the annual average duration of power cuts due to incidents (excluding events of an exceptional nature).

Statistical analyses in an external study have shown the dissymmetrical nature of unforeseen climate events in relation to the annual average duration of power cuts. It is statistically more probable to have a bad weather year (synonym of a large number of power cuts) than a good year in terms of annual average duration of power cuts.

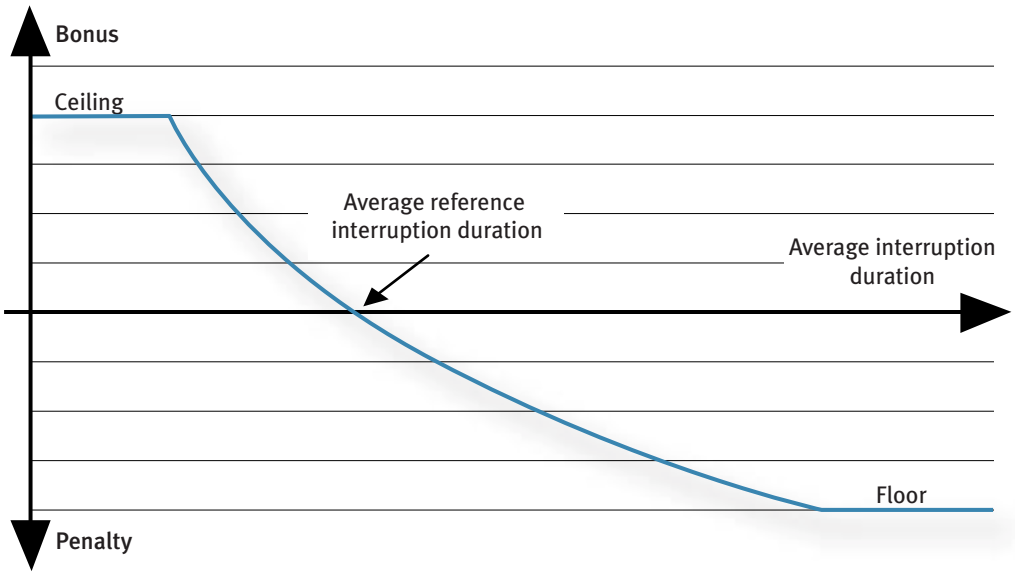
To compensate for this dissymmetry, the CRE has implemented a progressive incentive mechanism, represented in the figure below. So, for a reference power cut of annual average duration of 60 minutes, if the duration recorded is 50 minutes, the DSO will have a bonus greater than the penalty it would have to pay if the duration were 70 minutes FIGURE 8.

In order to reduce the financial risk for the system operator and for users, the CRE has capped the amount of financial incentives (be they positive or negative) to €20M for RTE and €50M for ERDF. These figures correspond to around 0.5% of the respective turnovers of these system operators.

The financial incentive has been calibrated in such a way that at the balance point (bonus/penalty = €0M) the marginal valuation per minute of power cut is equivalent to:
- €9.6M/minute for RTE. This figure corresponds to a valuation of the energy not distributed of around €12/kWh,
- €4M/minute for ERDF. This figure corresponds to a valuation of the energy not distributed of around €6/kWh.

As regards the reference power cut annual average duration, the CRE uses the following values:

FIGURE 8
PROGRESSIVE INCENTIVE MECHANISM



Source: CRE

- for RTE: 2.4 minutes. This figure corresponds to the geometrical average of the average durations of power cuts from 2002 to 2007,
- for ERDF: 55 minutes in 2009 and 2010, 54 minutes in 2011 and 52 minutes in 2012. These figures correspond to the halt in deterioration, then the beginning of recovery.

In addition to the mechanism for regulating quality of supply, an incentive-based mechanism regulates quality of service with two types of indicators:
- indicators which are monitored and combined with a financial incentive in order to verify whether goals are achieved or even exceeded. These financial incentives take the form of either a bonus/penalty entered under the expense and revenue clawback account, or financial compensations paid directly by ERDF to users who apply for them,
- indicators which are only monitored.

Since the 1st of August 2009, direct financial compensation has been paid for two service quality criteria:
- keeping planned appointments: in the event of a planned appointment being missed by ERDF, the user can apply for a fixed value financial compensation (a single payment of €23.75 in the case of a low voltage user ≤ 36 kVA),
- meeting deadlines for sending technical and financial connection proposals: in the event of failure to meet the deadline (10 days for a straightforward connection), the user can apply for a fixed value financial compensation (a single payment of €30 in the case of an individual low voltage connection ≤ 36 kVA).

Indicators combined with financial incentives in the form of a bonus/penalty entered under the expense and revenue clawback account include the rate of replies to complaints within 30 days and the availability rate of the SGE (system of exchange management) portal [37].

Finally, monitoring of ERDF quality of service uses indicators pertaining to:
- ancillary services: performance times for supply activation, cancellation and change of supplier services,
- user relations: number of complaints and rate of replies within 30 days by nature and by category of user,
- meter reading and billing: rate of low voltage meters ≤ 36 kVA with at least one real index reading in the year, rate of meter reading and billing data published in a timely manner, etc.,
- connections: time taken to send technical and financial proposals and time taken to carry out connections.

2.1.2. From monitoring to the quality report, the regulator ensures that the public electricity grid operators' performance is up to standard

Assessment of the quality of electricity supply [38] must be based on quantified, verifiable elements. As one of its missions, the CRE pays careful attention to the objective assessment of the quality of electricity supply.

To this end, since 2003, it has monitored indicators describing continuity of supply and quality of service for the main distribution system operator, ERDF, covering 95% of the country and 95% of users. The quality of public electricity distribution grids is assessed using technical criteria which, for certain indicators, are set at concession level, reflecting the role of the distribution grid in local supply.

Quality of supply depends on maintenance spending and investment in the renewal and development of the capacity of regional grid facilities. It is important to carry out multi-year monitoring of grid performance. The information collected from the TSO to assess its performance enables the CRE to ensure that there is a match between investments made and the level of quality obtained, in terms of supply as well as in terms of the service provided by the transmission grid. Monitoring at regional level leads to an assessment of the disparities in the public transmission grid between regions.

Thanks to these results, the quality levels achieved by grid operators are identified, their development over time is monitored and any local deterioration is prevented.

2.1.2.1. Electricity quality of supply has tended to deteriorate since 2000

French grid operators' continuity of supply currently comes out as one of the most satisfactory compared

(37) Information system portal through which ERDF and suppliers exchange the information needed for their activity.
(38) Continuity of supply, voltage quality, public electricity system quality of service.

with the rest of Europe. However, quality of supply has been deteriorating over the past few years. 2008 confirms this trend FIGURE 9. Whatever the ERDF management area, the annual average length of power cuts is greater in 2008 than 2007, increasing on average by over 20%. The ERDF Mediterranean region is the most severely affected, with a 50% increase in the annual average length of power cuts on the distribution grid between 2007 and 2008.

2008 was marked by the incident on the 3rd of November. A storm caused the loss of the 400,000 Volts axis between Marseilles and Toulon, as a result of an overload on the lines supplying the east of the region. However, this incident is not referenced as an "exceptional event" since a normal climate event, lighting, was responsible for the incident. Just in itself, it contributed to increasing the national equivalent average length of power cuts by two minutes on the transmission grid FIGURE 10 p. 53. Nevertheless, going from an equivalent length of power cuts below one minute in 2007, to nearly 23 minutes in 2008, the RTE south-east region was by all accounts the most affected by this event.

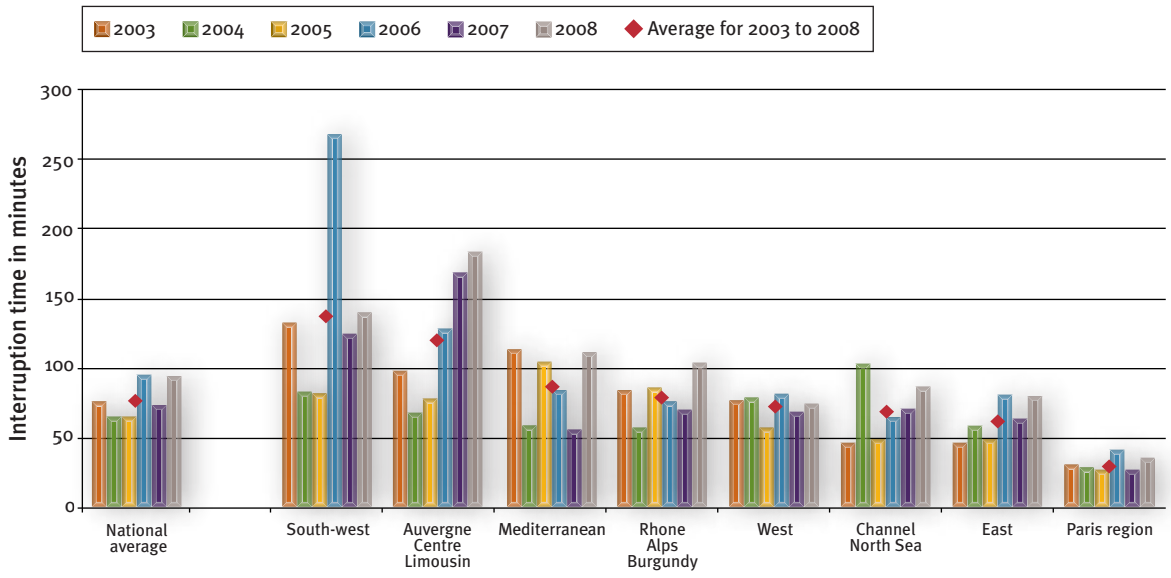
2.1.2.2. Exceptional events occurred in 2009

The CRE does not, to date, have all the data for 2009. However, the exceptional events in the first two quarters of 2009 are a warning of the deterioration in the quality of the electricity supply, all causes taken together.

At their height, the Klauss and Quentin storms in January 2009 deprived over a million and a half and over nine hundred thousand homes of electricity, respectively. The Klauss storm affected regions in the south-west quarter of France. However, the Quentin storm, less violent than the other, did affect more regions in metropolitan France FIGURE 11 p. 53.

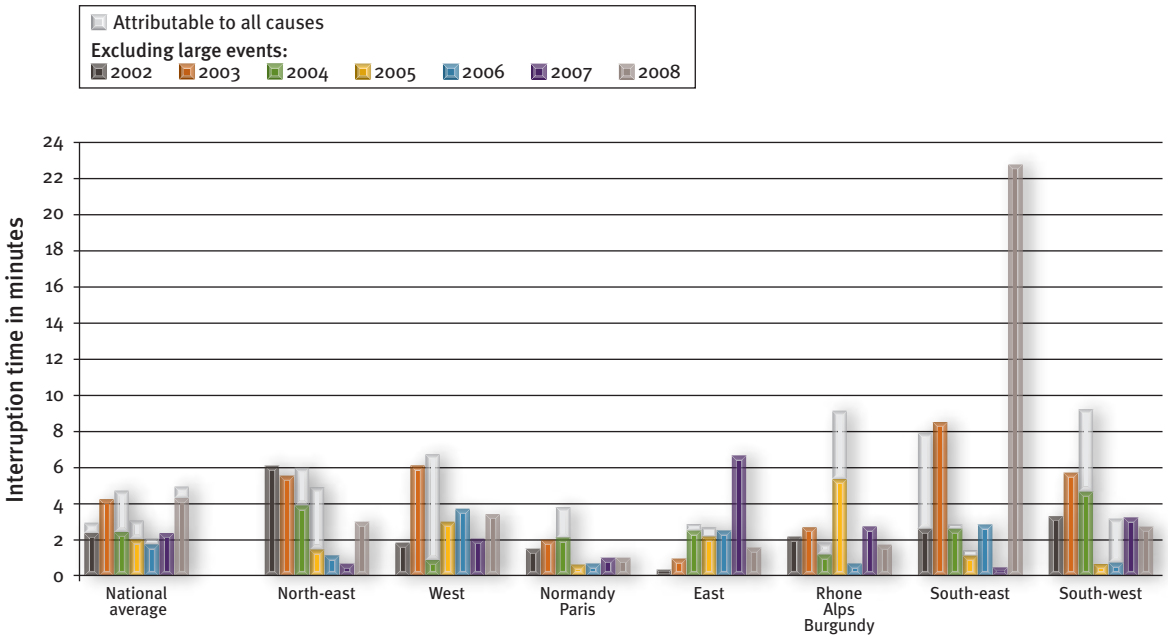
FIGURE 9

REGIONAL COMPARISON OF AVERAGE ANNUAL LONG INTERRUPTION TIME, FROM 2003 TO 2008, ON PUBLIC DISTRIBUTION GRIDS OPERATED BY ERDF, BY ERDF REGION (LOW VOLTAGE CONNECTED USERS, ATTRIBUTABLE TO ANY CAUSE, IN MINUTES)



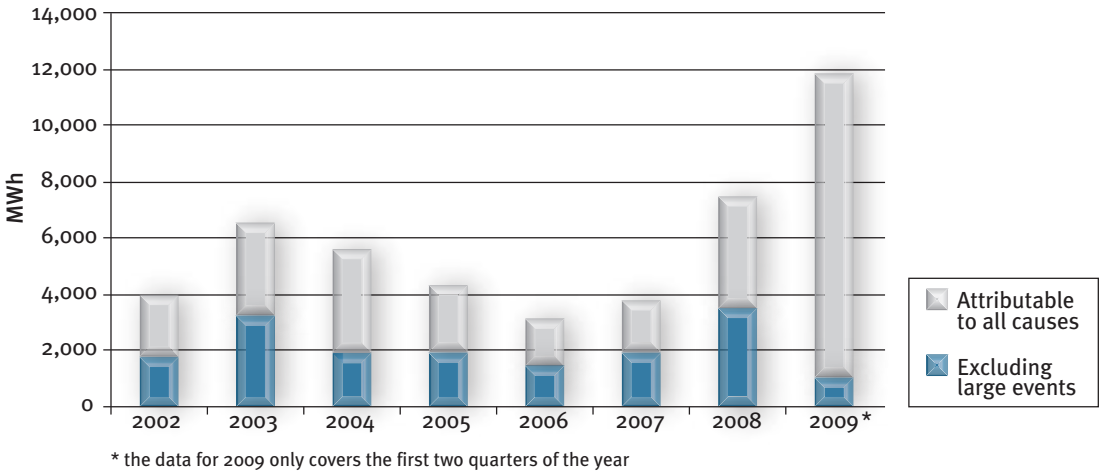
Source: ERDF

FIGURE 10
TRENDS IN EQUIVALENT INTERRUPTION TIMES BY RTE REGION FOR THE PUBLIC TRANSMISSION GRID FOR 2002 TO 2008 (IN MINUTES)



Source: RTE

FIGURE 11
COMPARISON FOR ENERGY NOT DISTRIBUTED ON THE TRANSMISSION GRID (IN MWh)



* the data for 2009 only covers the first two quarters of the year

Source: RTE

2.1.2.3. Quality varies across the country

The indicators show disparities between supply areas which are not reflected by national statistics, as these are too aggregated. The annual average length of long power cut varies considerably according to concession, ranging from a cut of less than a minute to cuts of three days TABLE 6. Aside from the incidents in 2008, there is a disparity of quality of supply over metropolitan France.

Beyond the distinction between rural and urban areas, there are disparities between regions FIGURE 12 p. 55.

Of the 30 concession-awarding authorities with the highest annual average length of power cuts in 2008, 23 are in the administrative region of Aude with an average greater than one day of cuts (1,500 minutes). Already in 2007, one parish in the Aude region had the highest annual average length of power cuts (4,838 minutes).

The system operator ERDF will need to improve the situation in the least well-treated areas in order to avoid an increase in geographical disparities, which does not necessarily imply uniform levels for all consumers, despite tariff equalisation.

2.1.2.4. Needs are different depending on public electricity grid users

Meeting a quality requirement commensurate with the tariffs for use of public electricity grids does not mean that system operators need not offer special solutions to the most demanding users in terms of quality. The CRE therefore oversees contractual commitments on quality in accordance with users' needs commensurate with local grid technical conditions.

Public transmission grid access contracts contain annual or triennial standard and/or personalised commitments. Commitments include thresholds representing a maximum number of incidents counting the number of long cuts, the number of short cuts or the number of long and short cuts and, possibly, the number of voltage dips FIGURES 13 p. 56.

At the end of 2008, 3,271 public transmission grid access contracts (CART) included standard or personalised commitments (long and short power cuts and/or voltage dips). For the same period, 89% of contract commitments were met for long and short power cuts and voltage dips. This is the lowest rate since 2002.

Under its new prerogatives for approval of CART models, the CRE will pay particular attention to quality of supply and service commitments.

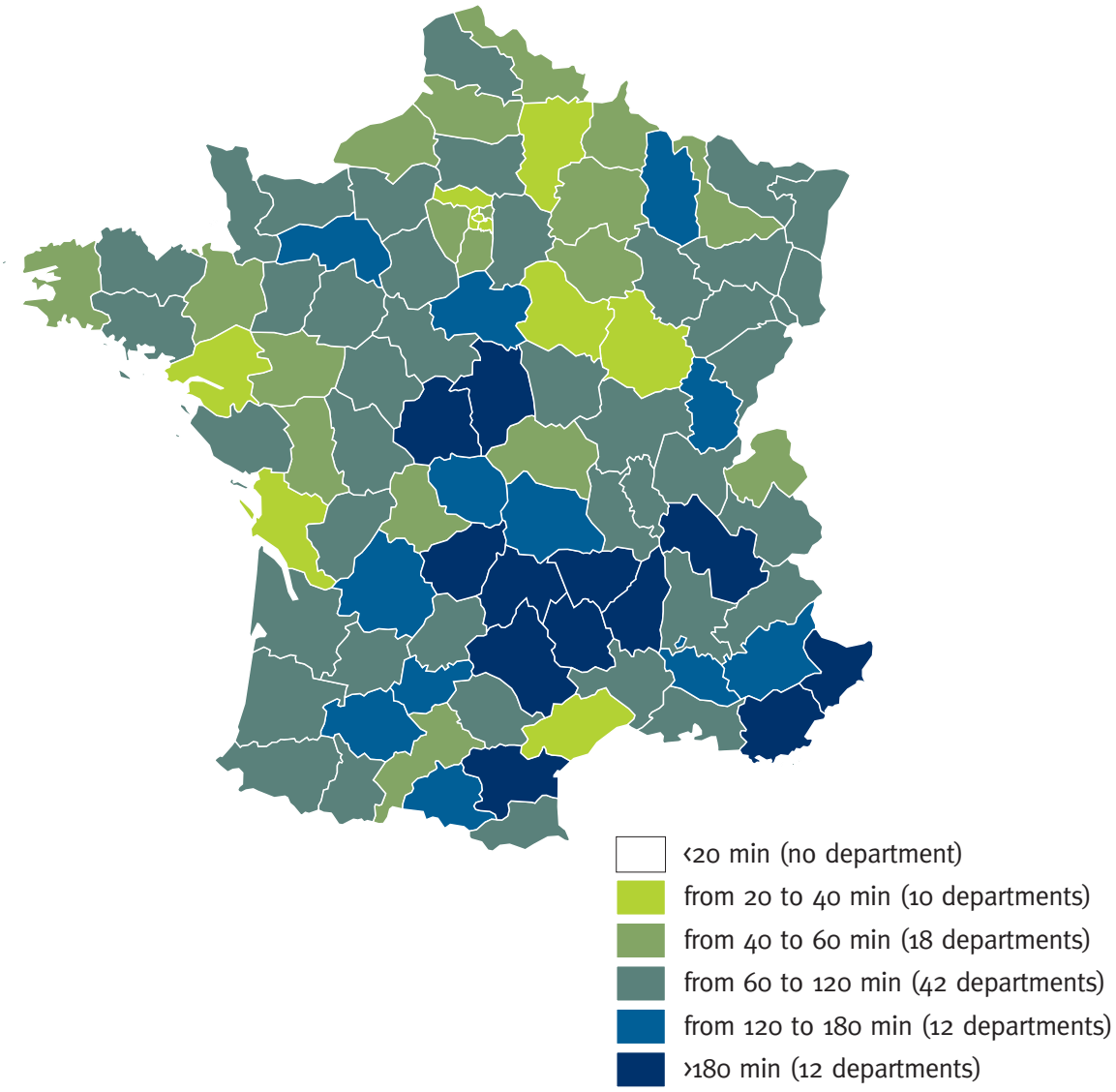
TABLE 6
ANNUAL AVERAGE LONG INTERRUPTION TIME AT CONCESSION LEVEL (IN MINUTES)

Time in minutes	2004	2005	2006	2007	2008
Maximum	1,484	1,768	4,838	1,551	4,690
Average	70	92	181	99	94
Minimum	<1	<1	<1	<1	<1

Source: ERDF

FIGURE 12

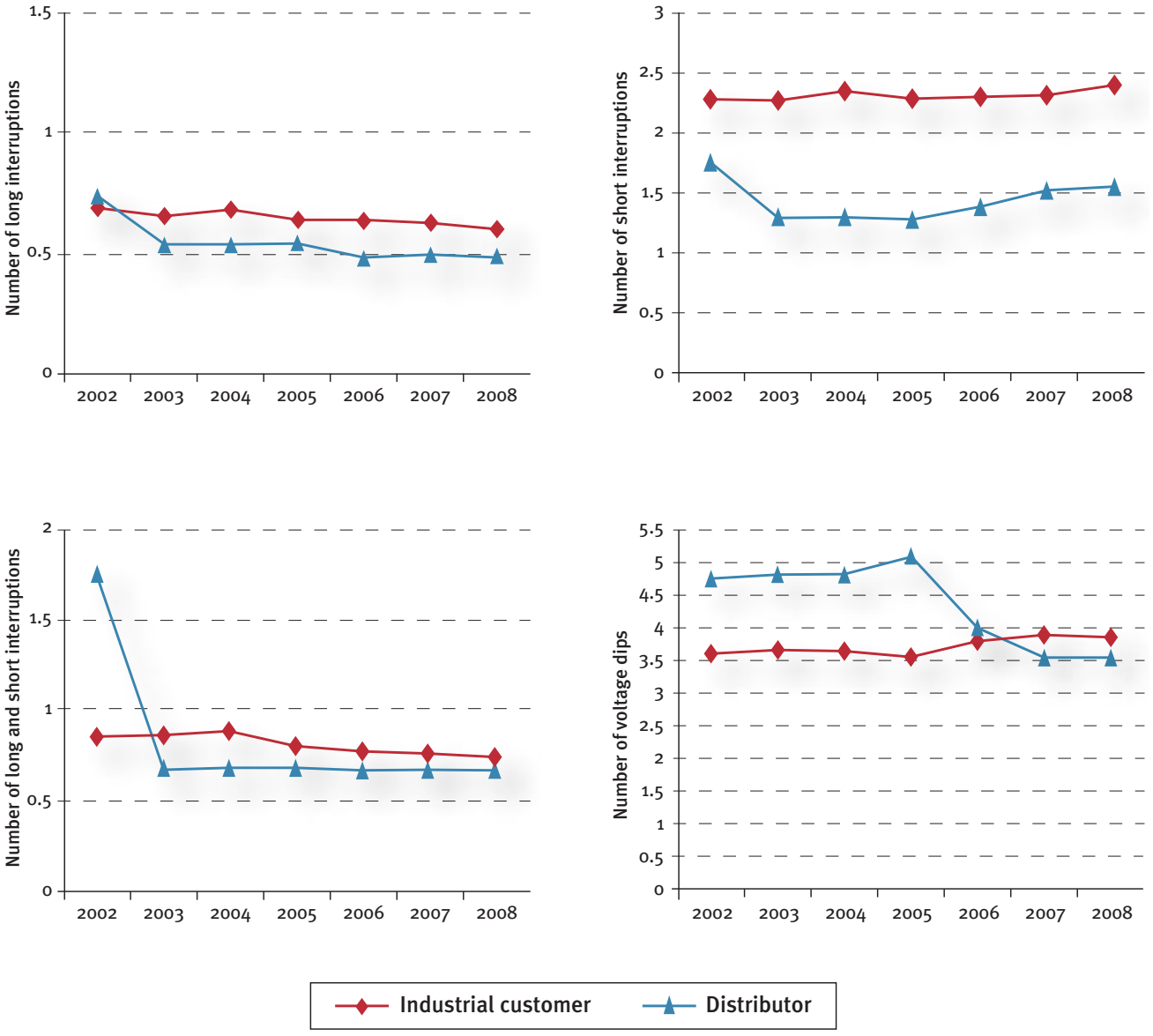
ANNUAL AVERAGE LONG INTERRUPTION TIME EXPERIENCED BY LOW VOLTAGE CONNECTED USERS (ATTRIBUTABLE TO ALL CAUSES, IN MINUTES, AVERAGED BY DEPARTMENT IN 2008) (39)



Source: ERDF

(39) The map is prepared from data on the ERDF system manager's concession grid averaged by department depending on the location of the concession granting authority.

FIGURES 13
TREND IN AVERAGE ANNUAL THRESHOLD COMMITMENTS FOR PUBLIC TRANSMISSION GRID ACCESS CONTRACTS



Source: RTE

2.2. For natural gas, an initial report on GrDF, GRTgaz and TIGF quality of service was published in November 2009

The tariffs for use of natural gas transmission networks (referred to as ATRT4 tariffs) and for use of public natural gas distribution networks (referred to as ATRD3 tariffs) have introduced a regulatory framework which encourages natural gas TSOs and DSOs to control their costs and improve quality of service for users.

For distribution, the incentive-based regulation of quality of service introduced by these tariffs supplements control, also exercised by the concession-awarding authorities. The latter, together with the CRE, help to assess and boost the quality of the public distribution service.

On the 17th of November 2009, the CRE published the first annual report on the quality of service of the gas network operators GrDF, GRTgaz and TIGF. GrDF service quality was monitored over one year, from the 1st of July 2008 to the 30 of June 2009, and for GRTgaz and TIGF over 6 months, from the 1st of January 2009 to the 30th of June 2009.

It can be seen that the three operators did what was necessary to set up the systems required by the tariff rules, in terms of software and resources. Virtually all the indicators were monitored and published regularly by the gas system operators.

In general, GrDF, GRTgaz and TIGF service quality improved progressively over the monitoring period in the areas most important for the smooth running of the market. However, none of the goals set by the tariff rules were reached, which meant financial penalties for the operators.

The mechanism established is upgradeable, since the tariff rules in force provide for the updating of indicators during a tariff period. Consequently, the CRE will work with market operators and players to improve the mechanism introduced, paying particular attention to quality of service for end users.

> Quality of service of the distributor GrDF

On the 1st of July 2008, GrDF introduced all the quality of service monitoring indicators set out in the ATRD3 tariff rules, with the exception of the two connection indicators, which have not yet been fully implemented.

On the whole, GrDF service quality has improved, even if there is still progress to be made and all goals have not been achieved. This improvement was particularly noticeable in the areas affecting proper market operation, where indicators are subject to financial incentives:

- the operation of the GrDF information system, OMEGA, which plays a key role in the smooth running of the French natural gas market, improved over the monitoring period. The rate of publication of meter consumption readings by the OMEGA supplier portal increased to rates above 98.6% in June 2009. The availability of this portal also progressed to 100% availability per week. Finally, the processing of suppliers' complaints by GrDF within 30 calendar days has progressively improved, reaching a level of 98.8% in April 2009 and a maximum of 99.2% in November 2008,
- the quality of the data passed on by GrDF to TSOs to calculate the allocation of gas quantities at transmission/distribution interface points* (PITD) has improved: the goals set by the tariff rules have been reached, or even exceeded in certain cases,
- the time taken by GrDF to deal with end users' complaints has decreased slightly. On the other hand, call centre accessibility has deteriorated for the Safety call out numbers, as a consequence of the introduction of new call management software and labour unrest at GrDF in April and May 2009, leading to a sharp increase in the number of calls,
- the times needed to carry out GrDF's main services (putting on and disconnecting supplies and connections) is slightly shorter, despite the labour unrest at GrDF in April and May 2009 with its by no means negligible effects.

From the 1st of July 2008 to the 30th of June 2009, GrDF quality of service monitoring indicators with financial

incentives attached generated a total of €174,521.65 in penalties for GrDF, which will go towards reducing its tariff [40], made up of bonuses of €1,000.00 and penalties of €175,521.65.

GrDF indicators were first updated on the 1st of July 2009 after consultation with market players, via the Gas working group (GTG) and the Consumer working group (GTC). New areas for improvement of GrDF procesess, important for proper market operation, were thus identified.

Thanks to this first report on GrDF quality of service, further changes in the quality monitoring mechanism could be envisaged, such as:
- monitoring compliance with the times agreed with suppliers for putting on and disconnecting supplies and modification of the reference time for changes of supplier,
- a system for detecting appointments missed through GrDF's fault, reported by end users, or detection by GrDF itself, with no need for reporting by suppliers,
- upward reassessment of the goals for the indicator concerning the times for passing on the data necessary for calculating PITD allocations to TSOs,
- reassessment of the amounts of certain financial incentives.

> Quality of service of the TSOs GRTgaz and TIGF

On the 30th of June 2009, GRTgaz and TIGF introduced all the service quality monitoring indicators set out in the ATRT4 tariff rules. Since monitoring of these indicators took place over six months, definitive conclusions could not be drawn from the analyses. Initial trends show mixed results:
- the quality of interaction between TSOs and shippers is satisfactory in terms of processing times for shippers' main network capacity reservation requests and GRTgaz and TIGF portal availability. Also, the quality of reading at consumption points on the GRTgaz network has gradually improved, exceeding the goal set by tariff rules. TIGF quality has remained close to the goal, despite isolated deterioration in April 2009,
- the quality of data passed on by TSOs to DSOs for calculating PITD allocations of gas quantities has deteriorated in the GRTgaz South area and in the TIGF area: neither TSO reached the goals set by the tariff rules. The times for passing on the provisional measurements of PITD quantities were complied with, on the whole,
- greenhouse gases emitted into the atmosphere by TSOs dropped between the 1st half of 2008 and the 1st half of 2009. The reduction was more noticeable for TIGF.

From the 1st of January 2009 to the 30th of June 2009, TSO quality of service monitoring indicators generated bonuses of €280,000 for GRTgaz and penalties of €445,000 for TIGF, which will be incorporated into their tariffs, consisting of bonuses of €30,000 and penalties of €150,000 for GRTgaz and penalties of €445,000 for TIGF.

With the publication of this first report, the CRE proposed a change in the quality monitoring mechanism to the Ministers for Energy and the Economy in order to harmonize and/or reassess three indicators that are important for the monitoring of smooth market operation.

> LDC service quality monitoring was introduced on the 1st of July 2009

In order to improve the LDC quality of service and to prevent any deterioration which could result from the productivity drive required of them, ATRD3 tariffs have introduced an incentive-based mechanism for regulating quality of service, based on the GrDF model. This mechanism, adapted to each LDC, concerns the quality of interventions, customer and supplier relations and the quality of allocations and meter readings.

The area of safety is not included in this mechanism, in that it comes under regulations for DSOs and control by other public authorities.

The mechanism for regulating quality of service consists of two types of indicators: those that are monitored in association with the publication of results and those which, in addition, have a financial incentive subject to whether previously set goals are not achieved or are exceeded.

(40) Financial incentives have a direct effect on the operator's authorised revenue and consequently, on their tariff covering the authorised revenue.

To make the necessary adjustments the CRE will, on the basis of feedback, propose changes in the mechanism for regulating quality of service to the Ministers for Energy and the Economy.

The next CRE report will analyse results for natural gas LDCs, whose quality of service monitoring mechanisms were implemented on the 1st of July 2009. It will also give a summary of electricity supply incentive-based regulation, implemented under the new tariffs for use of public electricity grids (TURPE 3), which came into force on the 1st of August 2009.

3. The CRE sets out the conditions for exemption from electricity or gas infrastructure third party access rules

3.1. LNG terminals may be entitled to exemption

Four new LNG projects were announced in France between September 2006 and March 2007: in Antifer (Gaz de Normandie, whose shareholders are CIM, E.ON Ruhrgas, Poweo and Verbund), Dunkirk (EDF), Fos (Shell) and Le Verdon (4Gas). Antifer, Dunkirk and Le Verdon have already been the subject of a public debate procedure and, between June and July 2008, the three investors announced their intention of continuing their projects and submitting an application for operating authorisation. On the 23rd of July 2009, the land reservation agreement extension for the Verdon terminal project was refused by the autonomous port of Bordeaux.

Those backing of these projects have all announced their intention of applying for exemption from third party access* under Article 22 of gas directive 2003/55/EC.

In 2008, the CRE worked with the working group on the regulation of LNG terminals in France, one of whose goals was to examine regulation methods in force in Europe, the place of exemption from third party access allowed by the European directive and the conditions for coexistence between regulated and exempt terminals.

In 2009, Dunkirk LNG prepared its exemption application which it submitted to the Minister for Energy on the 26th of June 2009.

3.1.1. Exemption criteria are defined by European directives and French law

Article 22 of directive 2003/55/EC of the European Parliament and the Council, concerning common rules for the internal natural gas market, provide for the possibility of new major gas infrastructures (interconnections between Member States and LNG terminals or storage facilities) being exempted from third party access and/or tariff regulation, according to predefined conditions.

> The European framework: directive 2003/55/EC

Third party access waivers are granted subject to five conditions:
- the investment should increase competition in the supply of gas and improve security of supply,
- the level of risk related to the investment is such that it would not be made if a waiver were not granted,
- the infrastructure must belong to a physical or artificial person distinct, at least in legal terms, from the operators of the systems within which it will be built,
- royalties are received from users of the relevant infrastructure,
- the waiver does not harm competition or the smooth operation of the internal gas market, nor the efficient operation of the regulated network to which the infrastructure is connected.

The European Commission can ask the regulatory authority or the Member State concerned to modify its decision to grant a waiver. It is competent to take a decision itself, in the final instance.

> The national framework: the 9th of August 2004 law and the 29th of July 2005 decree

The directive was transposed into the French law of the 9th of August 2004, Article 44 of which stipulates that:

- "the Minister for Energy can authorise [...] a waiver, for all or part of this facility or this structure ...",
- "the decision to grant a waiver is taken after an opinion is given by the energy regulatory commission [...]. This decision defines [...] the conditions when the beneficiary is authorised to refuse to enter into a contract for access to the facility or structure concerned",

- "the waiver becomes null and void if a start has not been made on the project for the construction or modification of the facility or structure within three years after the date of publication of the waiver ..."

The application decree of the 29 of July 2005 stipulates that the Minister for Energy shall refer to the CRE for an opinion and that the latter shall give its decision within one month of this referral and shall then notify the European Commission of its draft decision on the request for a waiver, within three months of reception of the file FIGURE 14.

3.1.2. At the time of the initial exemption application, the CRE established its doctrine

To enable project backers to submit exemption applications which are the most relevant possible, the CRE has drafted a doctrine designed to ensure consistency between the rules applicable to regulated terminals and exempt terminals, increase security of supply and encourage new players to enter the French market.

3.1.2.1. The processing of exemption applications is subject to a number of governing principles

The CRE considers that an exemption, granted on the basis of a case by case analysis, is likely to encourage investment in LNG terminals. However, the coexistence of a regulated system and an exempt system within the same terminal would cause operational difficulties and risks of cross-subsidies*.

For each project submitted to it, it will pay particular attention to the conditions for capacity allocation and the results of these allocations, analysing, in particular, their impact on smooth market operation. It considers, in particular, that the same company, including related companies, should not hold more than 66% of a terminal's technical capacities. If this were the case, the project holder should demonstrate that they have done their utmost to encourage commitments by other stakeholders, when the exemption application is examined.

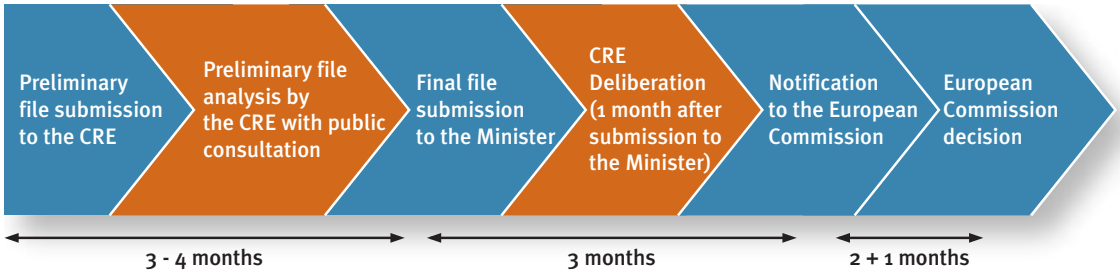
Each project backer should demonstrate that the investment could not be made without an exemption, in particular by proving that the levels of risk incurred and expected returns are such that they require this waiver. Furthermore, the CRE will only approve an exemption application if the conditions for putting unused capacity back on the market are clearly defined and published by the project backer. This market is understood to be the French gas market and neighbouring gas markets.

The CRE will conduct a public consultation specific to each terminal, exemption being granted on a case by case basis.

3.1.2.2. The CRE is closely involved at all stages of the procedure for exemption applications

When it is referred to by the Minister, the CRE has one month to give its opinion, which seems insufficient to make an in-depth analysis of the file and

FIGURE 14
THE STEPS IN PROCESSING AN EXEMPTION REQUEST



Source: CRE

initiate a public consultation of market players. It therefore suggested to project backers that it should be involved right from the initial phase when the exemption application is compiled and that they should submit a preliminary file to the CRE which can be subject to a public consultation.

From the project backer's point of view, CRE involvement as from the initial phase of the dossier gives them a preliminary opinion and allows them to make modifications, if they consider it necessary, before submitting it to the Minister.

3.1.3. The Dunkirk LNG terminal has received exemption

On the 19th of February 2009, the CRE consulted the market, on the basis of a preliminary file submitted by Dunkirk LNG. It collected market players' opinions and gave its preliminary positions on the Dunkirk LNG preliminary file. The confidential summary of the public consultation, as well as the CRE's position, were discussed with the project backer before the submission of its final application, to give the latter the possibility of adapting it.

On the 26th of June 2009, Dunkirk LNG submitted an application to the Minister for Energy for total exemption from third party access and tariff regulation for its terminal project, for a period of 20 years. This project contains two dimensioning scenarios, one at 10 Gm^3/year and the other at 13 Gm^3/year. In both cases, Dunkirk LNG undertakes that EDF group will not hold more than 8 Gm^3 of the terminal's capacities. The EDF subsidiary considers that the exemption is necessary for completion of the project under satisfactory financial and risk control conditions. It also indicates that an identical tariff will be applied to all subscribers to the terminal which should not exceed the competitiveness threshold that it estimates at €1.6/MWh. The competitive analysis carried out by Dunkirk LNG shows that the Dunkirk LNG terminal, by creating a new entry point and diversifying gas sources, will increase competition on the gas market in France as well as security of supply.

The Minister referred to the CRE on the 6th of July 2009. The European Commission was notified of the latter's opinion and the Minister's decision on the 16th of July 2009. It had until the end of January 2010 to give its decision.

The CRE opinion is favourable to granting exemption, provided that certain conditions are met by Dunkirk LNG.

The CRE thus reiterated the five assessment criteria contained in the directives.

> ***The investment should increase competition in the supply of gas and improve security of supply. In addition, the waiver should not adversely affect competition or the smooth operation of the internal gas market, nor the efficient operation of the regulated network to which the infrastructure is connected***

Analysis of the project's impact on security of supply

The CRE considers that a new LNG terminal intrinsically forms a new entry point on the French market and contributes, by definition, to diversifying sources of supply by allowing the arrival of LNG cargos from various countries, whether by long-term commitments or spot cargoes. It therefore improves security of supply by reducing France's exposure to an extended break in supply at one of the other gas entry points and provides the French market with more flexible conditions for access and use than those generally observed for gas transmission networks. The contribution of a new LNG terminal on French territory to the improvement security of supply is compromised in the event of a project providing for the possibility of re-exporting gas from France to other countries.

Analysis of an LNG terminal project's impact on competition

The project backer makes a competition analysis of the impact of its LNG terminal project:
- for the period when the terminal will be operational,
- at the level of the appropriately selected market.

CRE analysis for the competition criterion is based on assumptions of an appropriate market defined at national level. The CRE analyses the following points in particular:
- the commercial approach envisaged by the project backer,
- the principles of regasification capacity allocation,
- the impact on natural gas wholesale and retail markets at the level of the appropriately selected market,
- the mechanisms designed to optimise capacity utilisation in the LNG terminal,
- coexistence with regulated terminals.

> ***The level of risk related to the investment is such that this investment would not be made if a waiver were not granted***

The project backer must demonstrate that, under the regulatory framework in force, a balance cannot be achieved between a satisfactory return on investment for shareholders, a tariff which does not go beyond an acceptable level for shippers and securing cash flows corresponding to debt repayment.

> ***The infrastructure must belong to a natural or legal person distinct, at least in legal terms, from the operators of the systems within which it will be built***

> ***Access royalties are received from users of the relevant infrastructure***

3.2. New electricity interconnections can be exempt

3.2.1. European legislation provides for exemption

Article 7 of European regulation 1228 of the 26th of June 2003 stipulates, for new electricity interconnections, that part of the regulation may be waived. The articles which can be waived concern the use of the congestion rent (41), third party access (42) and the right of approval and modification of access rules given to the regulator (43).

It lists the conditions which must be fulfilled to obtain a waiver. It is up to the regulators concerned to

(41) Article 6.6 of European regulation 1228/2003.
(42) Article 20 of directive 2003/54//EC.
(43) II, III and IV of article 23 of directive 2003/54/EC.

decide on how to respond to an application for a waiver on these criteria. The European Commission then has two months to request the cancellation or modification of their decision.

In France, regulated interconnections are built and operated by the electricity transmission system operator. A waiver can allow an investor legally separate from the system operator to contribute to market integration by increasing the interconnection capacity between two countries. It is particularly beneficial to grant a waiver in the event of the project being deemed too risky to be borne by the local authority. The waiver increases interconnection capacities, while making the investor bear the risk.

Today, at European level, three projects have been given waivers in application of regulation 1228: EstLink between Finland and Estonia, BritNed between the Netherlands and Great Britain and East-West Interconnector between Great Britain and Ireland.

3.2.2. Exemption is not provided for under French legislation

The notion of a new exempt interconnection comes from European Commission law and is not represented in French law. This type of facility is not governed by any text of French legislation, nor any electricity TSO procedure. For an investor to draw up a full development plan for the construction and operation of a new exempt interconnection, it is necessary to define the technical and financial conditions for its connection, as well as operation of the line. While it ensures a stable, transparent, non-discriminatory framework for investors, the integration of new exempt interconnections into the French regulated system must protect the network user from any externalities caused by the connection of a new exempt interconnection [(44)].

3.2.3. The CRE drafts a procedure for waiver applications for new exempted electricity interconnections

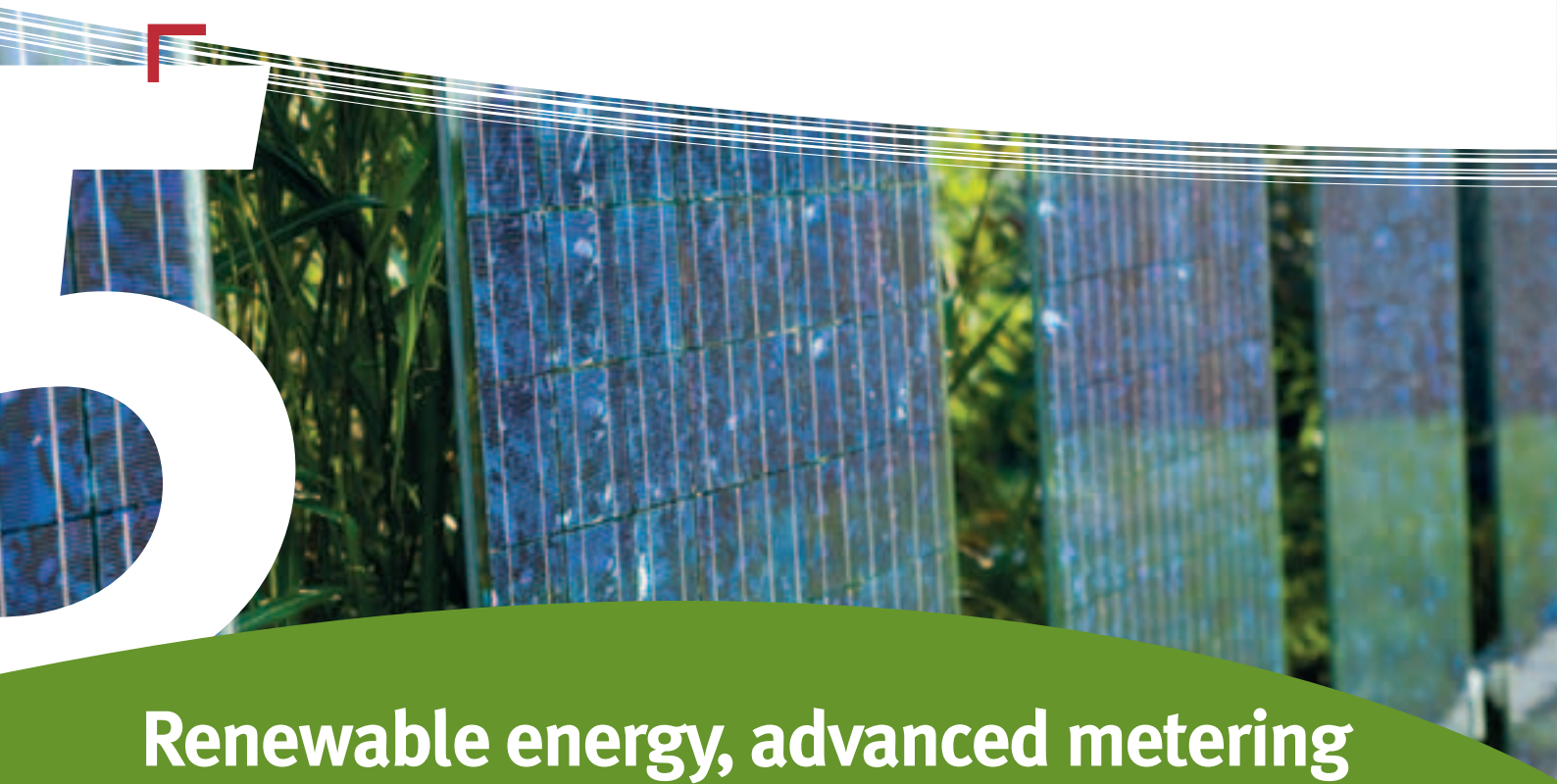
On the 2nd of April 2009, the CRE initiated a public consultation on the exemption of new electricity interconnections and the conditions for their access to the French public transmission grid.

Contributors were fairly enthusiastic over the possibility of exemption for new interconnections, while criticising a lack of interconnection capacities with neighbouring countries. They asked the regulator to impose measures to protect network users and prevent any irregular use of the new interconnection. The regulator's means of action would be to approve ex ante the interconnection access rules.

3.2.4. A waiver application for a new electricity interconnection was presented to the CRE

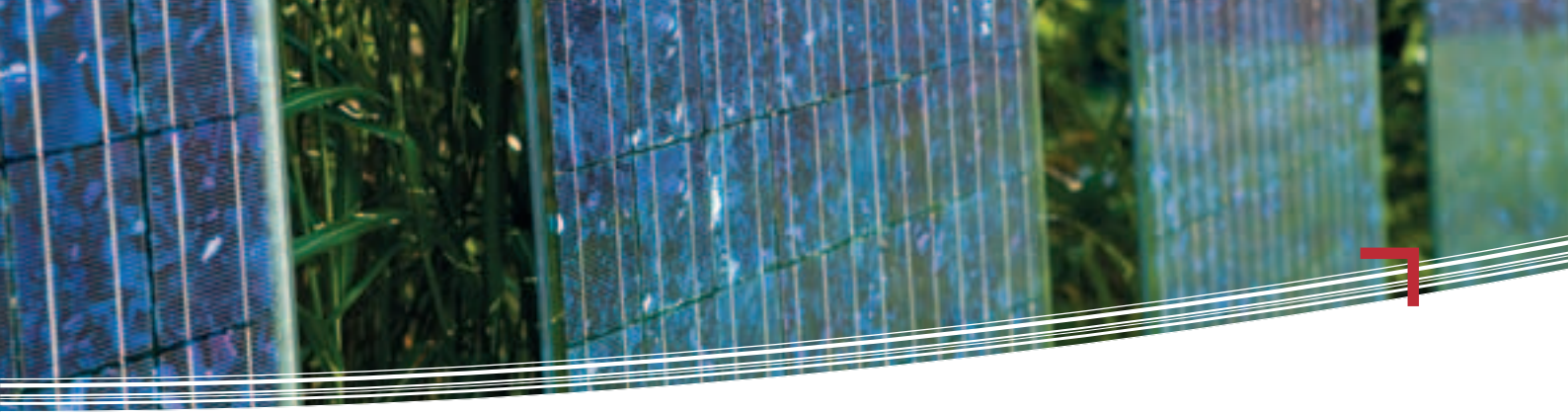
In 2009, a waiver application was submitted to the CRE and its British counterpart. The two regulators jointly listed a certain number of additional items to be included by applicants in support of their application: details on the methods of calculation, management and allocation of projected interconnection capacity, on the development plan and the assumptions used as a basis by the applicant and on the fulfilment of the conditions set out in regulation 1228. After reception of these items, the regulators will conduct a public consultation on the non-confidential part of the application. They will take a decision on the application, possibly setting further conditions for the project.

(44) For example, if any reinforcement works are supported by the local authority, their costs could constitute a large negative externality. The acceptability of such an externality could depend on the positive externalities related to using the interconnection.



Renewable energy, advanced metering systems and the grids of the future are all priority means of delivering sustainable development

*Words followed by * are defined in the glossary p. 113*



1. Two mechanisms are incentives to generate electricity from renewable energy sources: calls for tenders and buy-in tariffs

Directive 2009/28/EC dated the 23rd of April 2009 institutes a 20% contribution of renewable energy* to final gross European energy consumption by 2020, raised to 23% for France (45). An Order relating to the pluriannual investment programme* sets the contribution level for each type of renewable energy for achieving this goal.

1.1. Two calls for tenders issued in 2009

To achieve the goals set by the pluriannual investment programme, the Minister for Energy may issue calls for tenders for implementation by the CRE. The CRE will draw up the specifications based on guidelines from the Minister, analyse proposals received and suggest to the Minister how they should be classified. Finally, it will offer an opinion on the choice made by the Minister.

1.1.1. The first call for tenders concerned power plants using energy produced from biomass

Having received a draft specification from the CRE, the Minister issued a call for tenders for installations for the generation of electricity using biomass* energy* on the 6th of January 2009. This was the third call for tenders for this sector. Total capacity required was 250 MW, including 150 MW for installations located in priority regions. The approved applicants will have purchasing contracts for electricity generated, and at the price they offered, for a period of 20 years.

On the 2nd of February 2010, the Minister announced that, of the 106 received, 32 proposals had been approved for a power level of 266 MW at an average purchase price equivalent to €145/MWh. This represents an investment of around €750M and public funding of €150M per year for 20 years (based on a market price equivalent to €60/MWh).

1.1.2. The second call for tenders concerned ground-based solar power plants

In July 2009, the Minister for Energy issued the first call for tenders concerning ground-based solar power plants. Total capacity required was 300 MW, on the basis of two plants per administrative region, with a unit power equivalent to 5 or 10 MW. The approved applicants will have a purchasing contract for electricity generated, and at the price they offered, for a period of 20 years.

119 projects were proposed for the whole of France, with the exception of the PACA region. Most of them are based on photovoltaic modules made of polycrystalline silicon. Five projects based in non-interconnected zones* to the mainland electricity grid use thermodynamic technology. Their examination will take place in the first half of 2010.

1.2. Buy-in tariffs have been revised

A number of different types of tariff were submitted to the CRE in 2009: bagasse, biomass, photovoltaic and geothermal.

(45) This objective was transposed into programme law no. 2009-967 of the 3rd of August 2009 related to implementing the Grenelle de l'environnement.

In 2009, the CRE was asked to give its opinion on four draft tariff Orders relating to electricity generated:
- from bagasse (biomass from sugar cane),
- from biomass,
- by plants using energy from water tables or underground rock mass (geothermal),
- by plants using radiation energy from the sun (photovoltaic).

1.2.1. In the CRE's opinion, the draft tariff Order for electricity generated from bagasse is only appropriate for new installations

The Order setting the conditions for purchasing electricity generated from bagasse was published in the Official Journal on the 3rd of December 2009.

The Order provides for:
- for existing installations: an extra payment of €13 per tonne of cane, indexed against market price variations for coal and market prices for greenhouse gas emission quotas,
- for new installations: a buy-in tariff decreasing according to the power generated by the installations, between v155 and €170/MWh.

Asked to consider the draft Order dated the 19th of October 2009, the CRE was not in favour of the incentive planned for existing installations, being of the opinion that, applying principles stated in Law, this could not exceed €10 per tonne of cane. In addition, the CRE pointed out that the indexation method for the proposed incentive would contribute to maintaining a sustained dependence of island energy systems on fluctuations in prices for fossil fuels and greenhouse gas emission quotas. According to the principle thereof, this approach to an independent energy strategy as provided by the Law dated the 27th of May 2009 would in no way contribute to keeping generation costs down.

However, the CRE was in favour of the tariff planned for new installations.

1.2.2. The buy-in obligation* tariff for the biomass sector was robustly re-evaluated

The Order setting the conditions for purchasing electricity generated from biomass was published in the Official Journal on the 31st of December 2009.

The planned tariff, applicable for a period of twenty years, is presented in the form of a reference tariff, to which an additional bonus will be added, to be made up of a fixed proportion relating to the type of supply and a variable proportion dependent on the energy efficiency of the installation.

In its opinion issued on the 26th of November 2009, the CRE considered that the proposed reference tariff, set at €45/MWh, would not make it possible to achieve sufficient levels of profitability, but that the set proportion of the additional bonus of €80/MWh was set at a suitable level, as it would enable approved projects to achieve sufficient levels of profitability.

In addition to this, the CRE was of the opinion that the variable bonus would result in high levels of profitability for high rates of energy efficiency. As a consequence, it recommended that this should be restricted to €15/MWh instead of €50/MWh, a level offering remuneration conditions that are a sufficient incentive.

The CRE also pointed out the problems that would arise from the coexistence of two renewable energy support measures: the buy-in obligation and the calls for tenders. In fact, the buy-in obligation tariff sets a de facto price floor for projects submitted within the calls for tenders framework.

Based on the goals set at the Grenelle de l'environnement, the buy-in terms planned for electricity generated from biomass could lead to an increase in electricity public service charges from €400M to €1B/year by 2020, i.e. €1.0 to €2.5/MWh of unit contribution.

1.2.3. A new geothermal energy tariff aims to provide impetus for the French sector

A draft Order setting the purchase terms for electricity generated by installations using geothermal energy was submitted to the CRE on the 30th of November 2009. It provides for a significant increase in the tariffs in force since 2006 in order to provide impetus for this sector, which is still hardly developed in France. In fact, only the Bouillante plant in Guadeloupe and the EGS pilot project at Soultz-sous-Forêts (Lower Rhine) generate electricity from geothermal energy.

The strong dependence of geothermal installation generation costs on the features of the operating site and the lack of economic data relating to the potential of high-temperature geothermal energy in mainland France mean that the CRE is unable to give an opinion on any levels of profitability that might be delivered by the proposed tariff.

However, in overseas départements, the CRE has observed that the proposed tariff is higher than that which applies to the two first tranches of the plant currently in operation, without any apparent justification for such an increase.

Finally, the planned tariff is too high in the case of installations which have a contract arising from renovation work under the Order dated the 28th of December 2009 relating to the renovation of electricity generation installations using energy derived from water tables or underground rock mass.

1.2.4. The tariff proposed for solar installations does not take account of the reduction in the price of photovoltaic equipment

On the 2nd of December 2009, the CRE was asked to give an opinion on the draft Order setting the conditions for purchasing electricity generated by installations using radiation energy from the sun.

The aim of this draft was to establish and reinforce the terms of eligibility for the bonus for integration into an existing structure instituted in 2006, and to regionalise tariffs for ground-based installations. In this respect, it followed the recommendations made in the Poignant report BOX 4. Moreover, it created an intermediary tariff for installations showing evidence of less extensive integration (notably equipment added on).

In a deliberation on the 3rd of December 2009, the CRE considered that the planned tariff did not take account of the major reduction in the price of equipment that had occurred during the previous year, and that projects would be extremely profitable as a result, and the associated consequences for investment choices needed to be watched carefully. As a result of this, a number of adjustments were recommended.

> On the subject of the terms of eligibility for the bonus for integration into an existing structure, and given the practices observed in the field, the CRE considered that the planned criteria were not strong enough to prevent abuses. It recommended that a distinction be made for buildings for domestic habitation, which involve greater restrictions in terms of integration, and other types of buildings.

> A tariff scale was devised in line with this segmentation. It resulted in a project profitability level of 8%,

BOX 4
INFORMATION REPORT BY MP SERGE POIGNANT ON PHOTOVOLTAIC ENERGY TO THE *COMMISSION DES AFFAIRES ÉCONOMIQUES DE L'ASSEMBLÉE NATIONALE*

- On the 16th of July 2009, an information report on photovoltaic energy was submitted by the *Commission des Affaires Économiques de l'Assemblée Nationale*. Presented by M. Serge Poignant, MP for the Loire Atlantique, it gives an inventory of the capacity of the photovoltaic energy sector and the range of technology and applications currently available, and gives guidelines for a national development programme for this sector. The CRE was interviewed by this parliamentary mission.
- The report calls for continuity in the current support policy for the photovoltaic sector, whilst identifying certain limitations, particularly the absence of any specific concept of integration into existing structures or even any regulatory framework for the development of ground-based plants.
- It also suggests several ways to improve the mechanism in place, including the introduction of a decrease of 7% to 8% of the buy-in tariff for photovoltaic electricity depending on the sector's development, and a regionalisation of the tariff to take account of the differences in numbers of sunlight hours across the different départements in France.
- Finally, the report emphasizes the need to develop a French sector rapidly across the entire value chain. In particular, it calls for a strengthening of support measures for research into initiatives encouraging investment in production capacity in order to make up for French backwardness.

a level deemed to be sufficient to create the right conditions for making investment attractive, given the inherent risks of this particular activity and the guarantee obtained through the buy-in tariff. The view of the CRE also suggests that the annual indexation terms during the course of a contract should be adjusted to reflect the dominant part of investment costs in the cost of generation.

> The reduction of 9% per year for the tariff applicable in the first year, allowed for in the draft Order starting from the 1st of January 2013, should be applicable as of 2010 in order to follow the expected change in generation costs. Under these conditions, the buy-in price for photovoltaic electricity for an installation brought into service by 2020 would meet the price of the electricity supplied to the consumer, including the transmission tariff, for installations integrated into existing structures, and the market price for electricity for ground-based plants, all else being equal.

> The CRE raised the issue of keeping the buy-in obligation in the overseas departments and communities (see part 5 of the report at point 2.2. p. 70).

The Order published in the Official Journal on the 14th of January 2010 took some of the recommendations of the CRE into account. The proposed segmentation aimed at making a distinction between equipment set up on buildings for domestic habitation and other types of buildings was upheld. This segment was extended to buildings used for health and education services.

Adjusting for the consequences of this new segmentation, the tariffs applicable to electricity generated by equipment set up on other types of buildings were revised downwards. This reduction was more marked for new buildings, on which the windfall effects were concentrated, than for others. Moreover, the annual reduction in tariffs was strongly accentuated.

With this decision, the Minister for Energy signalled his intention to counter the speculation that was now rife in the sector. However, the tariffs approved are still much higher than those proposed by the CRE. It is therefore a concern that this initiative will not be enough to totally neutralise the major windfall effects, all the more so, given that no measures have been taken to restrict the number of ground-based plants in overseas departments and communities, where the situation is most worrying. In fact, this multitude of projects, should they all become reality, would rapidly lead to a situation of a surplus supply, with no possible use.

Based on the goals set under the Grenelle de l'environnement and in line with the current pace of development, the buy-in conditions planned for electricity generated from solar energy could lead to increasing the electricity public service charges by €2B per year, certainly by 2015, i.e. €5/MWh of unit contribution.

This is why the development of this sector overseas will be followed up closely by CRE services throughout 2010.

2. An effort must be made to connect renewable energies to the electricity grid in order for them to develop

Boosted by the progress in technology, the development of renewable energy is the subject of a proactive government policy in the form of the buy-in obligation mechanism. This policy will be part of the "3x20" objective from this point on (46).

This ambitious national and European policy raises a major challenge for the electricity grid, in terms of connection* and the injection of these new types of energy generation, to which the CRE, in the context of its missions, is paying full attention.

2.1. The demand for connections is increasing exponentially with the development of decentralised generation installations

The rise of decentralised and renewable energy generation has largely been launched by successive take-offs of the wind and photovoltaic energy sectors.

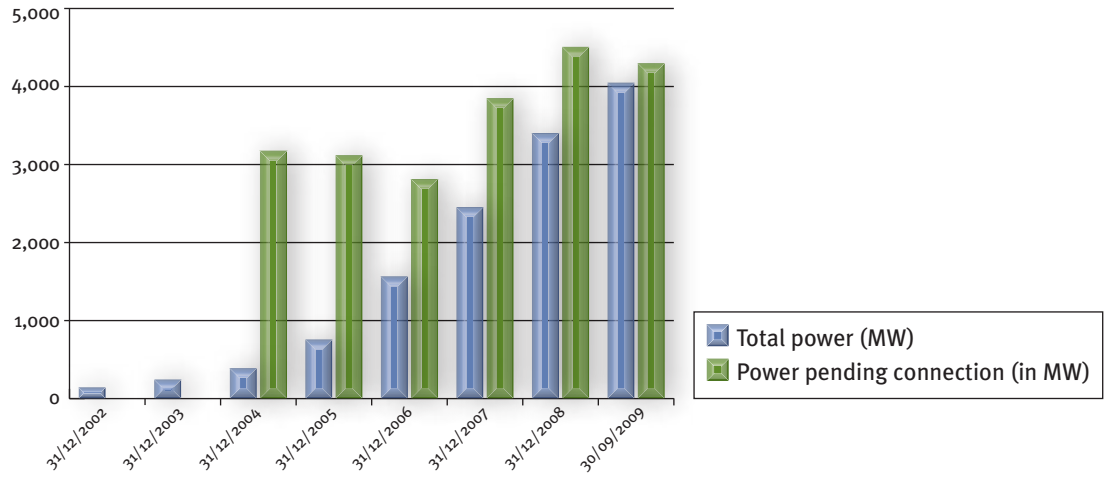
Since 2000, connecting up wind energy, which is undergoing exponential growth, has been a major challenge for transmission system operators* (TSOs) and distribution system operators* (DSOs). Wind capacity in excess of 4,000 MW has been connected to public electricity grids since then, and, at the end of

(46) The '3x20' objective, set for each Member State, consists of reducing the European level of CO_2 emissions by 20%, increasing energy efficiency by 20% and raising the share of renewable energy sources to 20% of consumption by 2020.

September 2009, ERDF and RTE estimated that 4,300 MW of wind power was pending connection FIGURE 15 p. 69.

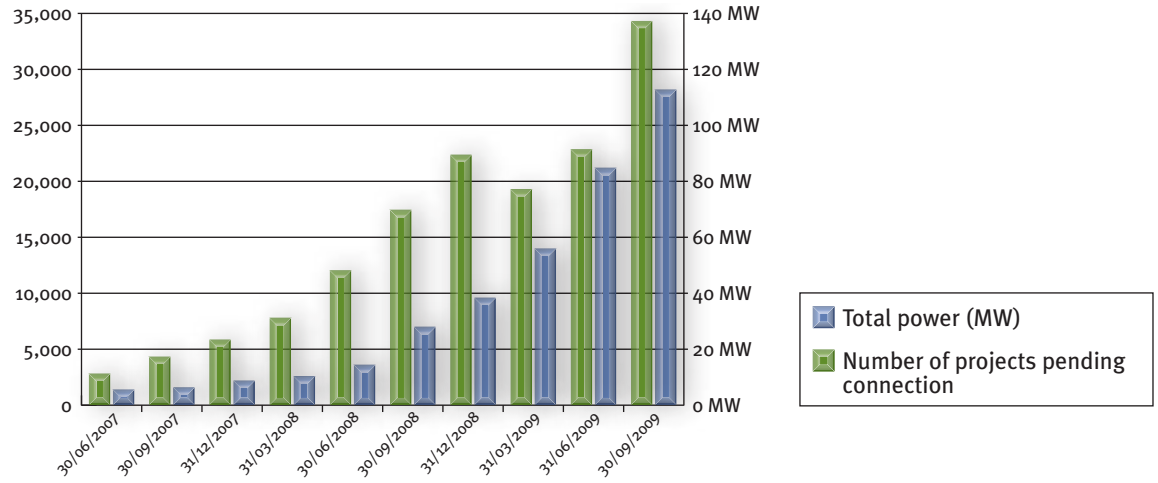
The explosion of the photovoltaic sector, which in fact happened at a later stage in 2007, has further increased the demand for connections. Indeed, the photovoltaic buy-in tariff, which rose in 2009 in continental France to €33 cents/kWh for ground-based installations and €60 cents/kWh for equipment with the bonus for integration on existing structures, proved to be a considerable incentive in an overall context of a reduction in costs since 2008, and led to strong development in the photovoltaic sector in France. The photovoltaic capacity jumped from 10 MW at the end of 2007 to around 140 MW in September 2009, spread across 30,500 sites. In September 2009, ERDF estimated that around 1,660 MW was pending connection, spread over 34,000 sites, FIGURE 16.

FIGURE 15
WIND POWER CONNECTED AND PENDING CONNECTION TO THE MAINLAND GRID (IN MW)



Sources: SER and FEE (ERDF data)

FIGURE 16
PHOTOVOLTAIC POWER CONNECTED TO THE MAINLAND GRID (IN MW) AND NUMBER OF PHOTOVOLTAIC PROJECTS PENDING CONNECTION



Sources: SER and SOLER (ERDF data)

The ability of electricity grids to absorb such a level of generation injected into the public distribution grids greatly depends on the dimensioning of these grids. To keep pace with current development in the wind energy sector, public distribution grids need to be reinforced. Without this, the concentration of new wind generation plants may result in grid "restrictions"; in other words, not all of the generation can be injected.

Current development in decentralised generation, mainly wind energy, is moving at a much faster rate than the reinforcement of the grids. While waiting for the necessary grid reinforcements, system operators must therefore manage this congestion* of injection capacity. They have opted to classify projects according to the order in which requests for connection are made. Waiting lists have been drawn up, where the first projects received will obtain the available capacity, and the following projects will face restrictions or even interruptions whilst awaiting the reinforcement work.

As early as the 21st of February 2008, the CRE had already issued a release on the sharing of connections within the wind energy development zone in order to accelerate the reinforcement work necessary for increasing injection capacities. In 2009, the CRE regulated the practices of system operators for entering and remaining on the waiting list via its deliberations of the 11th of June 2009 relating to the rules for drawing up procedures for processing connection requests. Through these deliberations, the CRE aims to prevent doubtful projects from blocking up the available injection capacity, in favour of more advanced projects arriving at a later date.

2.2. The island grids reach their limits for receiving intermittent, non-manageable generation

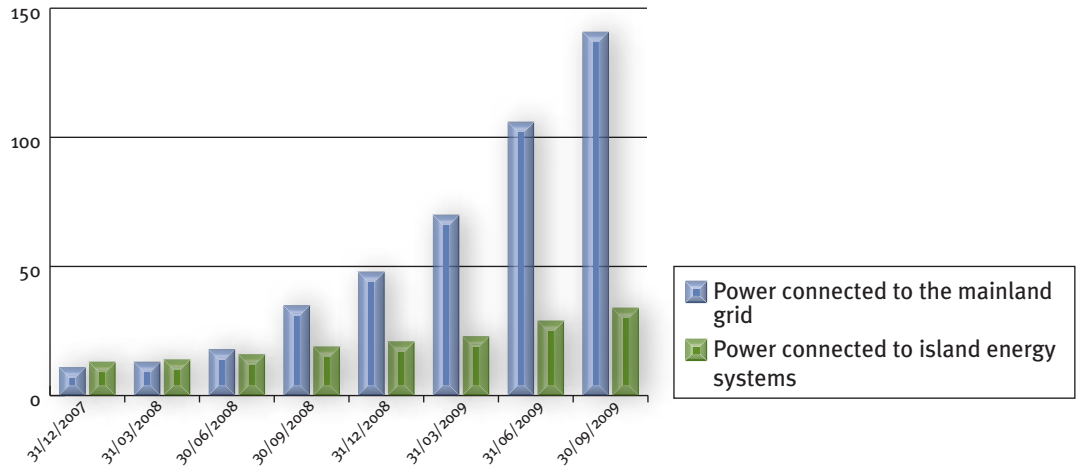
The French island territories have climates with long hours of sunlight, providing a good basis for developing the photovoltaic sector. As FIGURE 17 clearly shows, 30% of the projected levels of photovoltaic power should be delivered in these small grids that cover 4.6% of the national territory.

When it reaches significant levels, decentralised, uncontrollable generation (47), which is largely intermittent* in supply (48), cannot be covered by the current strategy for managing the balance between generation and consumption. In fact, under these conditions, fast generation methods that can be brought in at any time to balance the system are no longer enough to compensate for the variations in generation and consumption.

This risk is made even more obvious by the fact the grid is a "mini" one (49). On the one hand, the strengthening of the burgeoning generation and consumption makes the

(47) Meaning that it is not managed in relation with the grid control system.
(48) Electricity generation is said to be intermittent when it varies according to factors that cannot be controlled by the producer. In the current state of technology, wind and photovoltaic generation installations are intermittent.
(49) With low consumption.

FIGURE 17
POWER DISTRIBUTION OF FRENCH PHOTOVOLTAIC INSTALLATIONS (IN MW)



Sources: SER and SOLER (ERDF and EDF SEI data)

imbalances wider, and, on the other, the low number of fast starting generation units restricts the system's capacity to respond. This is particularly the case for "island systems" in Corsica, Guadeloupe, Martinique and La Réunion, plus the "mini" grid in French Guiana.

To take such risks into account, the regulation stipulates in article 22 of the Order dated the 23rd of April 2008 that "all generation installations (where the power Pmax reaches at least 1% of the minimum power transiting across the public electricity distribution grid) using intermittent power such as wind farms and photovoltaic installations can be disconnected from the public electricity distribution system at the request of the system operator if it observes that the total power injected by these installations reaches 30% of total active power transiting across the grid."

As indicated in TABLE 7, taken from the latest EDF SEI monitoring report, the cumulative power from photovoltaic and wind installations planned for these island grids is five times higher than the 30% threshold for the minimum power level transiting on each of these grids.

In this context, it should be remembered that the report on the pluriannual investment programme on electricity generation presented to the Parliament in June 2009 indicated that "achieving the goals set by the Grenelle de l'environnement in terms of renewable energy penetration in the non-interconnected zones will be done by developing stable rather than intermittent renewable energy".

Under these conditions, the CRE considers that financial incentives to develop new intermittent, uncontrollable generation projects in the non-interconnected zones need to be reduced. This is one of the reasons why it did not issue a positive opinion regarding the buy-in tariffs submitted to it for electricity generated by this type of installation.

2.3. The financial terms for connection are changing and will be modified depending on the implementation of connection mechanisms for renewable energy

In 2008, the CRE participated in setting up a new system for invoicing connections to the public electricity distribution grid. Price scales for invoicing connections for the main operators (notably ERDF) therefore came into force on the 1st of January 2009. These price scales, applicable to generation and consumption connections alike, include the corresponding grid costs for low tension power connections lower than 36kVA. They are accompanied by a tariff discount mechanism, which came into force at the same time, defining the proportion of costs covered by the tariff for use of the public electricity grids* (TURPE) and the additional balance covered by the applicant.

The CRE considers that this invoicing system, which is to be extended to other types of connection, offers users transparent and non-discriminatory connection terms. On the 29th of January 2009, it therefore approved the EDF SEI price scales, which came into force immediately.

The CRE is keeping a close eye on how this system develops in future, with a view to implementing the mechanisms for connection of renewable energy established by the Grenelle 2 Law designed to share the connections of these generation systems and to contribute to their development. The CRE had already called for such a sharing in its communication dated the 21st of February 2008, even if this particular deliberation referred exclusively to the connection of wind farms in wind farm development areas.

TABLE 7
POWER FROM WIND AND PHOTOVOLTAIC INSTALLATIONS (IN MW)

Power in MW	Réunion	Guadeloupe	Martinique	French Guiana	Corsica
30% threshold for photovoltaic and wind	75	42	45	24	45
Total wind and photovoltaic power connected or pending connection at the end of June 2009	213	205	162	109	322

Source: EDF SEI

3. Metering equipment contributes to managing the demand for energy

The CRE is keeping a close eye on any plans to roll out advanced metering* systems for electricity and gas, within a monitoring committee and consultation bodies.

3.1. The advanced electricity metering is a major issue

3.1.1. The CRE is organising the monitoring of advanced metering projects

Advanced electricity metering systems offer a number of benefits FIGURE 18.

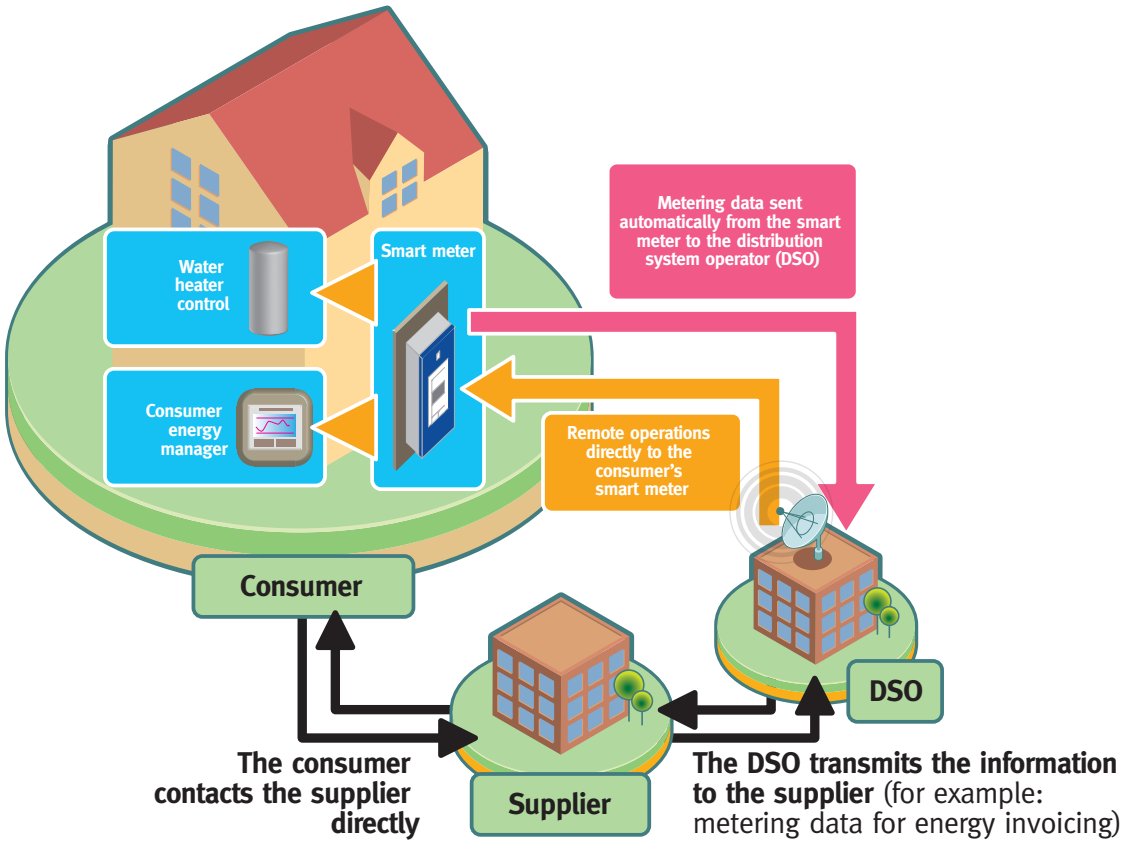
Benefits for the consumer:

- greater awareness of consumption levels: bills based on actual data, no more estimated bills,
- energy demand management services: use of the demand curve, power line coupling etc,
- no need to disturb consumers for meter readings, when moving in or out or when changing power level or supply offer,
- less time needed to carry out services (24 hour notice possible),
- wide range of supply and services.

Benefits for the supplier*:

- measurements for balancing individual zones made more reliable,
- choice of supply tariff periods,
- on-demand consumption readings,
- control of peak customer consumption via supply offers including the concept of "moveable peaks".

FIGURE 18
BLOCK DIAGRAM OF SMART ELECTRICITY METERS



Source: CRE

Benefits for the producer:
Makes it easier to set up installations for the micro-generation of electricity, such as the generation of electricity from photovoltaic energy.

Benefits for the grid operator:
- readings made more reliable,
- gains in productivity: reduces number of on- site visits,
- control of non-technical losses (fraud),
- optimisation of grid management.

3.1.1.1. Consultation groups are involved in shaping current projects

> The ERDF Linky project is aimed at the mass market

In the case of the Linky project, consumer working groups have been involved in organising the experimental phase starting in 2010. Operating methods have been finalised, the communication mechanism for informing users when the meter is going to be installed has been defined and the features of the meter that will be used have been specified.

ERDF has also prepared the Linky project generalisation phase by defining the specifications for the Linky meter's technical functionalities, in discussion with the various parties involved, in time for installing the first batch of meters.

> The ERDF advanced metering project for major clients

For the major client sector, ERDF has led discussions with the various parties involved and defined the main functionalities planned for the new "high voltage major client" meters intended to replace the current "ICE" meters (Interface Clientèle Émeraude) and "ICE four-dial" meters (Producers).

Starting in 2013, this meter will be installed for users connected to the high voltage grid (subscribed power ≤ 50 kVA) with a metering point* located "primarily" at the supply transformer. It will complement the new SME-SMI meter, which will be installed for users connected to users connected to the low voltage grid (subscribed power > 36 kVA) from 2010, and almost all users connected to the high voltage grid with a metering point located "secondarily" at the supply transformer.

BOX 5
THE FRENCH PEOPLE'S VIEW ON ELECTRICITY CONSUMPTION AND ADVANCED ELECTRICITY METERS

- In September 2009, the CRE carried out a survey conducted by the IFOP Institute [50] to evaluate consumer expectations with regard to smart meters. Indeed, in 2007, ERDF launched the Automated Meter Management project, following CRE advice. This aims to replace 34 million electricity meters in France by 2016 with advanced metering systems, also known as smart meters or communicating meters.
- The survey confirmed that the smart electricity metering project met the expectations of the French people: 83% were in favour of implementation, the youngest among them being the more enthusiastic (92% of those aged 18-24).
- The people surveyed had a very positive view of the features of advanced electricity meters, especially the better opportunity for consumption management that they offer (67% of French people saying that it was a "very good thing"). Given that 54% of French people check their electricity consumption regularly or from time to time, the improvement in the accuracy of bills, which would no longer be based on estimates, but on actual consumption, was also greatly appreciated (64%), as was the option to vary consumption to coincide with off-peak* tariffs (61%). To a lesser degree, those asked also widely acknowledged that it was a good thing to be able to find out the level of greenhouse gas emissions related to their level of electricity consumption (52%). In fact, managing electricity consumption was the primary expectation voiced with regard to advanced electricity meters (35% of statements), over and above the option to benefit from offers tailored to their consumption pattern (25%) or billing based on actual consumption (25%).

(50) Survey taken from the 3rd to the 4th of September 2009 by telephone to the home on a sample of 1,007 people representing the French population aged 18 years and over.

> *Advanced metering projects for local distribution companies*

As regards local distribution companies* (LDCs), a working group dedicated to the development of advanced metering systems on their territories was set up in the 1st half of 2009. This facilitates discussions between LDCs and ERDF with a view to developing advanced metering systems to the same standards.

> *Incorporating energy demand management aspects into metering projects*

At the end of 2009, the CRE decided to launch a working group dedicated to energy demand management issues in order to make it easier to take account of consumer expectations in terms of energy demand management and innovative services in advanced metering projects. The group will be launched in the first quarter of 2010.

3.1.1.2. The deliberation of the CRE dated the 11th of February 2010 covers the evaluation of the EDRF Linky project's experimental methods

The deliberation of the 6th of June 2007 stipulated that the ERDF experiment would be subject to evaluation. The deliberation of the 11th of February 2010 presented the grid that will evaluate whether the project set up by ERDF provides the functionalities expected of an advanced metering system.

During the experiment, some will be unaccessible or only partially accessible (51).

3.1.1.3. The experiment initiated by ERDF will be complemented by a call for declaration of interest issued by the ADEME concerning equipment downstream of the meters

Following consultation with the CRE, the Agency for the environment and energy management (ADEME) added a section related to demonstrators that might be installed downstream of the advanced meters in

(51) To evaluate them, four operating modes have been set up:
- a 'production' mode to test, automatically, for all customers involved in the experiment, the functionality of the smart meter compatible with current IT systems (SGE/Disco),
- a 'model' mode to experiment, on a few hundred customers, with new services (load curve, off peak hours at customer choice, etc.),
- a 'demonstrator' mode to test, on some meters not connected to customers, those functions that are already planned for the meter and/or AMM IT system, but incompatible with current information technology (IT) systems,
- a 'file' mode that corresponds to the submission of detailed functional specifications for the metering system functions that will still not be available during the experiment.

its call for declarations of interest for smart grids and electrical systems using renewable energy that it issued on the 20th of July 2009.

This call for declarations of interest will make it possible to implement new offers including load shedding and energy management functions for users and the processing, for energy demand management purposes, of data collected using detailed consumption, power and tariff display functions etc.

3.1.2. The CRE submitted a draft decree on advanced metering to the Minister

In conformity with point IV of article 4 of the Law dated the 10th of February 2000, the CRE submitted a draft decree covering the roll-out of advanced electricity metering systems to the Minister for Energy on the 12th of February 2009.

In particular, the draft decree provides for an experiment for the DSOs of over a million clients and a generalised roll-out in 2020 across the whole of the territory, to include intermediary stages.

3.2. Advanced metering for gas under discussion

Having consulted the parties involved, the CRE, in its deliberation of the 3rd of September 2009, determined the minimal functions expected of an advanced gas metering system on the retail market and the terms required for potential roll-out.

In particular, the choice of an upgrade to an Automated Meter Reading system for taking remote index readings seems to be the most suitable technical solution here. GrDF will have to conduct an experimental phase, followed by a feedback phase. A technical/economic study will be run in parallel to check certain technical, functional and economic aspects of the advanced metering systems. Finally, this type of system will have to meet the requirement to supply end customers with information on their energy consumption on a sufficiently regular basis, meaning they will be more encouraged to control how much they use.

In accordance with the request made by CRE, and based on discussions with all the parties concerned, GrDF has set the specifications for the experimental phase, which it will run as of from April 2010.

4. Advanced metering is a first step towards the electricity grids of the future

4.1. Renewable energy needs to be incorporated into existing grids

4.1.1. Electricity generation from renewable energy sources* will generate intermittent and diffuse energy flows that will disrupt the grid operators' usual ways of operating

The public distribution grid is undergoing change: it is, at the same time, becoming an energy collection grid. For public electricity distribution grid operators, the ever-growing number of generation installations (buy-in obligation tariffs for new and renewable energies are having the expected effect of an incentive, especially for wind and photovoltaic installations) are generating an intermittent and diffuse in-flow of energy, which is going to disrupt their usual ways of operating.

New tools will be required from now on to enable operators to control their grids without risk, maintaining the voltage plan within the regulatory limits and adapting the dimensioning of components to a range of energy flow scenarios.

4.1.2. Installations generating electricity from renewable energy sources have priority access to the grids

Directive 2009/28/EC dated the 23rd of April 2009 provides for a new provision in relation to directive 2001/77/EC dated the 27th of September 2001, which it repeals: priority or guaranteed rights of access to the grid for installations generating electricity from renewable energy sources with a view to supporting these methods of electricity generation. This right may be exercised subject to requirements relating to maintaining the reliability and safety of the grid based on transparent and non-discriminatory criteria.

The entire directive, as well as this provision, must be transposed into French Law before December 2010. This will be the opportunity to decide on the concepts of priority and guaranteed access and to define ways for establishing criteria for maintaining the reliability and safety of power grids.

4.2. New uses for electricity will develop

Over the next few years, energy flow could undergo significant changes due to new uses for electricity. Some types of use are continuously declining (especially lighting, due to low-energy bulbs), but new ones are emerging, increasing consumption. This is particularly true to for air conditioning, audio and video equipment and electric heating.

In addition to this, developments in the car sector might also require the electricity grids to adapt: if the scenario predicted by the Minister for Ecology, Energy, Sustainable Development and the Sea (MEEDDM) becomes a reality, we can predict a considerable increase in consumption.

In order to avoid having to strengthen grids to meet this growth, it will be necessary to control periods for charging electric vehicles by adapting in principle – and taking account of the new market context – the central remote control system already in place in France for a major proportion of off-peak heating uses.

4.3. The connection of offshore wind farms, balancing supply against demand and the adaption of distribution grids to include rechargeable electric and hybrid vehicles are major issues

All of these new uses for electricity and public electricity grids are gradually leading to a paradigm shift. The electricity system is moving from a situation where generation is widely controllable, while consumption is not, to a situation where generation is only partly controllable, whereas some consumption will have to be managed actively in terms of demand.

In a context of strong development in installations generating electricity from intermittent sources, the balance of the electricity system might depend on the ability of grid users to adapt. Energy storage or the monitoring of the recharging of electric vehicles, on the one hand, and the control of distributed or diffuse generation, on the other, are both possible avenues of thought in terms of the future of public electricity grids.

4.4. The ERGEG is exercising its influence on the research budgets alloted by the European Commission to grid operators and is developing its position on smart grids

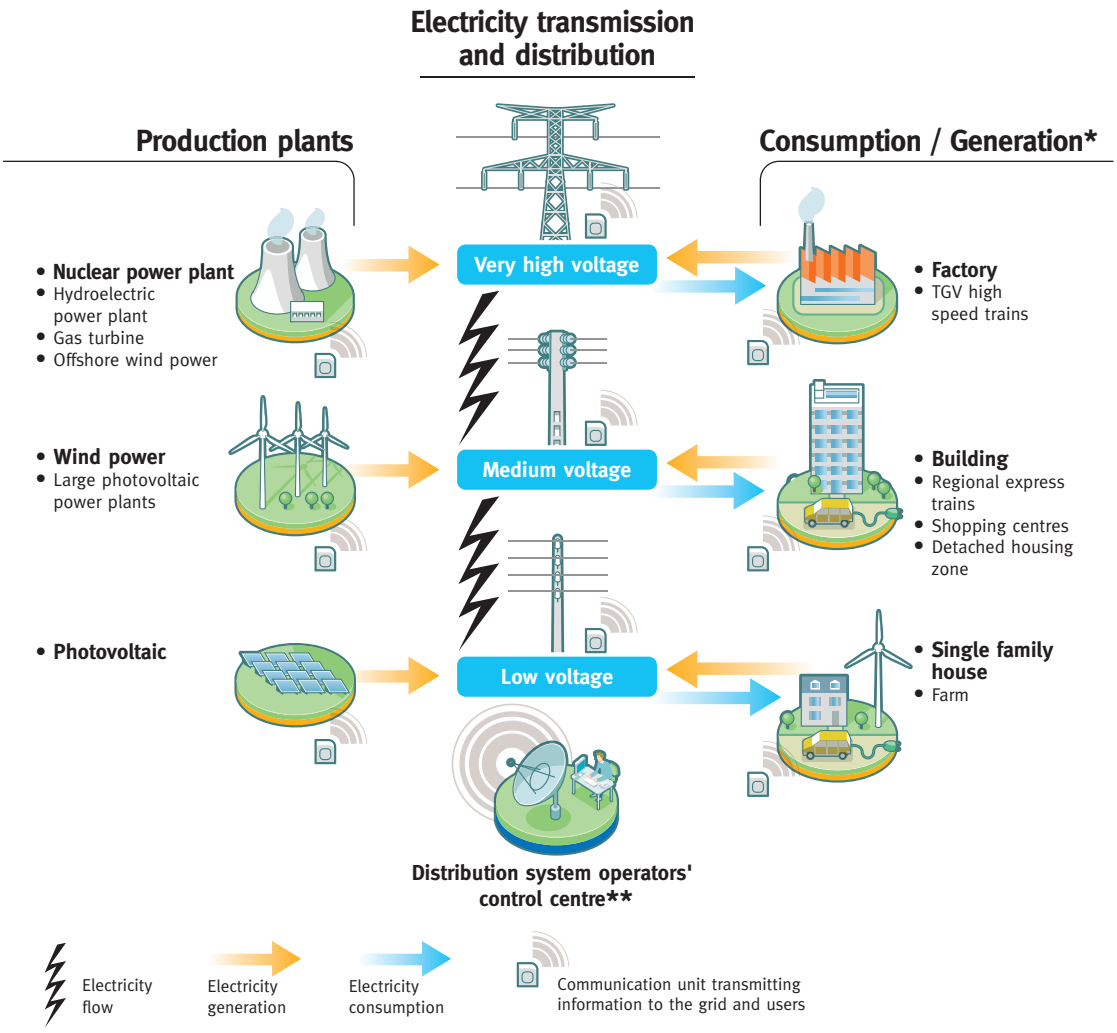
European grid operators are all faced with the same problem of trying to balance the electricity system. Work carried out by the European Commission with a view to coordinating research and development of smart grids started back in 2001. Much of it was done in the context of the European technology platform, now known as the Smart Grids Forum.

In 2009, under new Energy and Climate Directives, the European Regulators Group for Electricity and Gas* (ERGEG) participated in the Smart Grids workgroup steering committee. This was set up to coordinate the introduction of smart grids within the technical and legal fabric of electricity grids and highlight strategic directions for implementing this new technology.

4.5. The CRE anticipates tariff issues for the smart grids of the future

Major grid operators in France are deeply involved in national and European research and development programmes on smart grids. The CRE is itself aware that the amount of investment required to roll out these smart grids will focus thinking on tariff issues. With the aim of paving the way for decisions that will shape the public electricity grids of the future, it initiated a period of dialogue with the entire sector at the colloquium held on the 27th of January 2010, FIGURE 15 p. 77.

FIGURE 19
THE FUTURE ELECTRICITY GRID: HOW DOES IT WORK?



* Consumers become players in their consumption: they control it and consume and generate electricity. In the future, the electricity supplied by their wind turbine or photovoltaic panels will be directly injected onto the grid or into their house, building or factory power circuit. It will be used, for example, to recharge the batteries of their electric cars. Using smart meters, consumers and system operators will know the consumption of a site or home exactly: energy suppliers could offer consumers new products depending on their consumption profile, and new energy efficiency or energy demand management services.

** Electricity system operators' control centres obtain real time consumer energy demand information: they then distribute the correct quantity of electricity on the system. Using new information technologies, system operators easily detect and locate system breakdowns and perform remote maintenance, metering and control operations.

Source: CRE

The CRE is contributing to the **smooth operation** of electricity and gas markets **to the benefit of consumers**

p. 79 > **The CRE is monitoring price movements on the wholesale market**

p. 83 > **The CRE is helping to ensure the smooth operation of the retail markets**

*Words followed by * are defined in the glossary p. 113*

1. The CRE is monitoring price movements on the wholesale market

1.1. The CRE has published its 2nd report on the operation of the French wholesale electricity and natural gas markets

1.1.1. For the wholesale electricity market, the report details the auditing work concerning the evaluation of EDF production capacity

> Electricity pricing and trade

In 2008, progress on the wholesale market continued. The volumes traded increased by 655 TWh i.e. a rise of 13% compared with the previous year. However, during the first half of 2009, trading was clearly slowed down, which may be related to the global downturn and the financial crisis.

Cross-border trade showed a net export balance that was down for 2008 and the first few months of 2009. This downturn was due to the strong increase in volumes imported, a reflection of growing peak import requirements and the reduction in exports, especially in 2009. The increase in imports is mainly linked to imports from Germany and Switzerland.

In terms of market prices, developments observed since the beginning of 2008 are generally consistent with the balance between supply and demand and the movements of fossil fuel prices. Analyses conducted on the rise in price of certain fixed-term products, identified just ahead of a virtual power plant* auction as part of the initial monitoring report, have shown that these developments are founded on basic price movements.

On a European level, price comparisons between France and neighbouring markets reflect both the structural differences between production facilities and the high level of sensitivity of consumers in France to variations in temperature (52).

> Production: analysis and transparency

An analysis of the different uses of the production sectors has given the following results:
- in 2008, the period of use of each sector was consistent with its order of merit,
- the estimated marginality period for the nuclear sector was less for 2008 than observed in 2007 (5% in 2008 as against 15% in 2007), whilst border imports are now more often marginal (39% in 2008 as against 25% in 2007).

In accordance with its deliberation of the 8th of January 2009, the CRE has conducted reviews of EDF's implementation of methods for optimising its nuclear and hydraulic energy production capacity. These reviews, which were initiated in May 2009 and conducted with the help of external consultants, were completed in December 2009.

These reviews were part of a wider framework of analysis of the medium-term models used by EDF to optimise its production capacity whilst following the constraints of balancing supply and demand for its

(52) A one degree temperature drop corresponds to a 2,100 MW in demand due to the wide use of electric heating.

individual zone. They also examined the effects of these information models on establishing prices.

The conclusions drawn by these reviews do not question the optimisation principles used, which aim to minimise production costs.

The reviews initiated also involved EDF Trading intervention on the markets and the tools it uses for optimisation on a daily basis. EDF Trading offers are overall consistent with marginal costs. An ex post analysis of marginal costs and spot prices* on EPEX was carried out, based on estimations of the hours during which EDF was supposed to be marginal. Based on these reviews, the, CRE observed that the discrepancies seen between prices and costs (53) are at levels that do not reflect a powerful impact on the market. The discrepancy between spot prices and marginal costs will be monitored specifically on a regular basis.

Finally, an analysis of the quality of forecast data relating to production capacity shows that this data is still not reliable enough, even if improvements have been made and more have been announced by the French Electricity Union (UFE) for completion by the end of 2010. The CRE used its communication of the 20th of November 2009 relating to the price peak (BOX 6) to issue a reminder of the importance attached to the

(53) Marginal system costs.

BOX 6
THE CRE HAS PUBLISHED ITS INITIAL CONCLUSIONS FOLLOWING THE ELECTRICITY PRICE PEAK ON THE 19th OF OCTOBER 2009

- The price of electricity on the French spot market reached a spectacular peak on Monday the 19th of October, with hourly rates of €3,000/MWh over four hours, between 8am and noon. During the four hours concerned, volumes offered for sale were not enough to cover purchase orders, and the fixed price for these hours therefore corresponded to the technical ceiling of €3,000/MWh, which was in force on the EPEX Spot Auction. The CRE started an investigation into the factors explaining these price levels, and published its initial conclusions in its deliberation of the 20th of November 2009.
- The severe tension on the production bases and forecasts for the balancing of supply and demand the day before the 19th of October was the major cause of the price peak experienced the following day. In a context of reduced availability in terms of production capacity, mainly caused by scheduled or unscheduled stoppages of nuclear production facilities, this level of tension resulted from a combination of two factors:
  - a revision of consumption estimates between Friday and Sunday for Monday the 19th of October(+3,000 MW) and a peak level of consumption on the19th of October,
  - a revision of estimates of the availability of production capacity from the Friday to the Sunday for Monday the19th of October (-4,100 MW), essentially due to unscheduled stoppages concerning nuclear power facilities and the hydraulic power plant at Grand-Maison on the Sunday morning. The latter power plant was put back into service at the end of the day on the 18th of October.
- As a result, the CRE asked EDF to put the necessary resources in place to improve the current low level of reliability of the forecast data for its production capacity. It also asked the UFE to improve levels of transparency in its forecast data, and emphasized the importance attached to notifying any unscheduled stoppages to be made at plants in this respect. It is to be noted that, in its release of the 23rd of November 2009, the UFE confirmed new developments in its notifications issued with regard to the availability of production capacity.
- On the question of the operating systems within EPEX Spot, a number of market players have criticised the electricity exchange market operator for not having launched a second auction that might bring in additional offers of sale when it was observed that there was not enough capacity available. EPEX explained to its members that this was due to internal procedures within the specific operational context of the morning of Sunday the 18th of October. The CRE considered that it was difficult to ascertain after the event whether a second auction could have made it possible to resolve the imbalance between supply and demand. The CRE observed that the new procedure put in place as of the 23rd of October maintained the restriction of the latest time at 11.05 for launching a second auction. The CRE therefore recommended that EPEX, its members and TLC partners should consider whether any measures might relax this restriction if required.

notification of any unscheduled stoppages to be made at a plant. In its release of the 23rd of November, the UFE announced changes for 2010, in particular notification, within 30 minutes, of any unscheduled stoppages affecting production units exceeding 100 MW.

> *Transaction analysis*

An analysis of transactions made on the electricity market, EPEX Spot Auction, shows that the order books reflect an overall balance in the system.

The data collected by the CRE in the summer of 2008 relating to all the transactions made in 2007 by players of the French market for products Y+1 and Y+2 shows an overall volume of around 247 TWh. Over half of these transactions are carried out intra-group (for example, a parent company and its trading subsidiary). Excluding these transactions, the purely bilateral market represented around 6% of volumes traded for calendar products Y+1 and Y+2 throughout 2007.

1.1.2. For the wholesale natural gas market, the report confirms that price peaks are not a result of market abuse

> *Natural gas: pricing and trade*

Developments in the wholesale gas markets since 2008 have happened in a context of several key events in terms of the gas market in France. On the one hand, these events are linked to the international context, particularly the downturn in oil prices in the summer of 2008, the economic recession and the surplus of gas available compared to global requirements. On the other hand, there were specific developments on the French market, such as merging what were previously three transport zones in the north of France (North H, East and West) into a single zone on the 1st of January 2009. This situation resulted in liquidity in the North zone and more opportunities for trade-offs between long-term import contracts indexed against oil products and purchases made on the markets.

Volumes delivered to gas exchange points* (PEGs) are increasing. Gas trading on the French intermediary market, calculated across all periods, has sharply progressed since 2008, and this trend continued for the first half of 2009. Volumes traded reached around 66 TWh for 2008, as against 27 TWh in 2007. At 69 TWh, volumes traded in the first half of 2009 exceeded those for 2008, the North zone remaining the most buoyant in terms of trading.

During most of 2008, wholesale gas prices in France increased due to the indexing on oil products, delayed by several months. The low level reached in 2009 is a reflection of the overall weak level of demand compared to the gas volumes available on the international markets. Current price levels on the market in France are distinctly below the price levels of long-term contracts indexed on oil product prices.

This development in the price of gas was similar in France and Europe, even if a lack of correlation was observed at times between European markets. Major price discrepancies between the North PEG and Zeebrugge were observed during November 2008, for example. In order to identify the specific factors on the French market that might have contributed to this, the CRE carried out investigations, which highlighted the following conclusions:

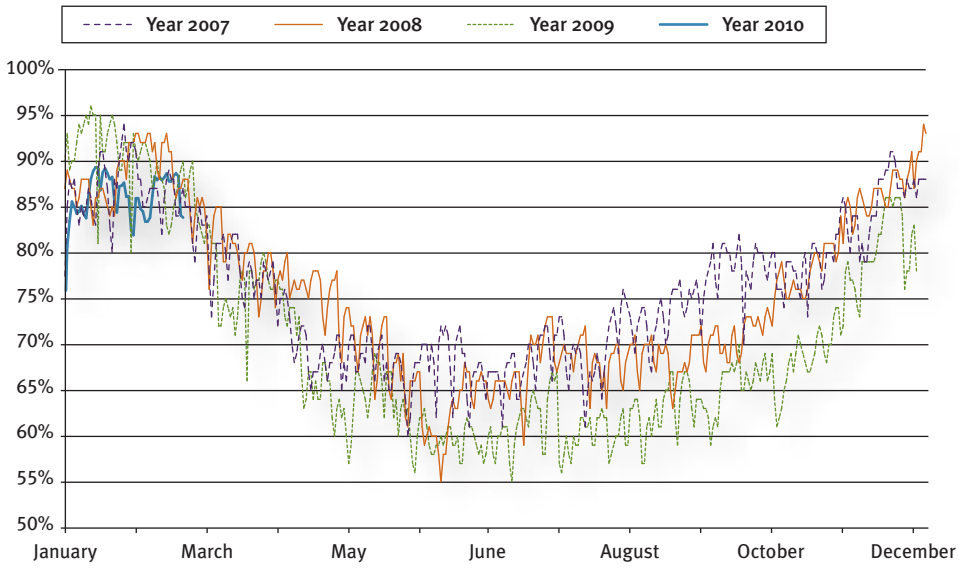
- short-term trade-offs from Belgium are difficult to set up in structural terms,
- no market manipulation was revealed,
- trade-offs between long-term supplies and short-term purchases were a factor supporting the market price at the North PEG in November 2008.

> *Use of the infrastructures*

Following recent developments in terms of conditions for access to infrastructures, the North zone now combines most features needed to become an effective market place, where natural gas suppliers* can ensure a balance between their needs and their resources. However, several aspects still need to be improved: harmonisation of conditions of access to the networks across the GRTgaz North zone and adjacent European markets, the emergence of a true secondary capacity market and the possibility of directing physical flows from France to Belgium and Germany.

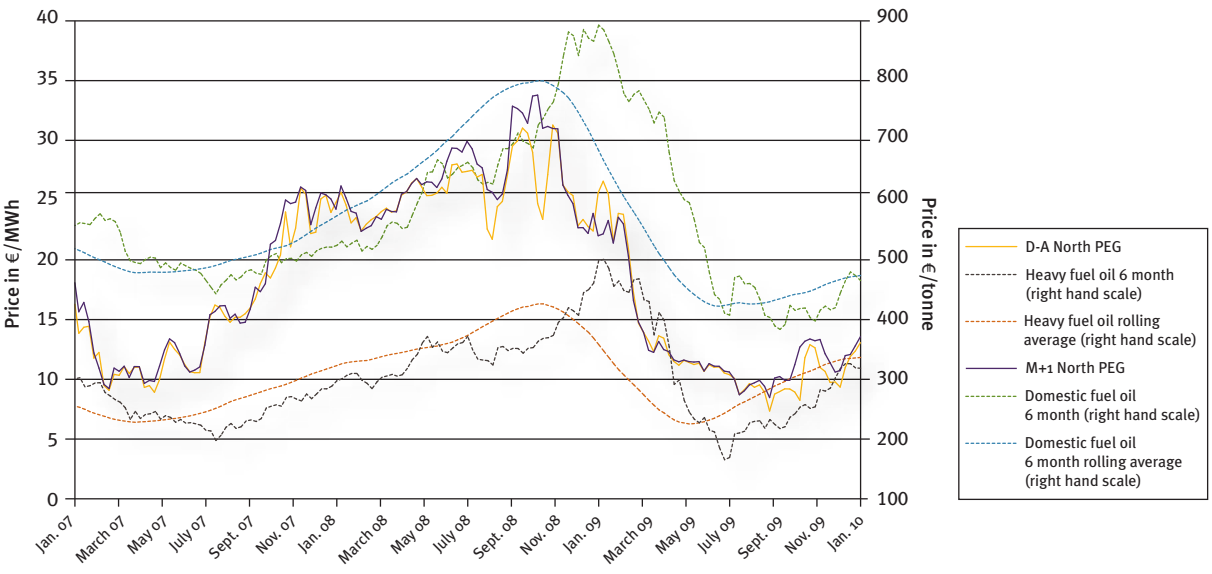
In the south of France, the barriers to market development persist: supply is restricted by the current dimensioning of entry capacity and the existence of two distinct market places. However, the conditions for access to the south of France should improve with the installation of the Fos-Cavaou LNG terminal* and the development of interconnections* with Spain.

FIGURE 20
NUCLEAR POWER PLANT PRODUCTION COEFFICIENT (% OF REFERENCE CAPACITY)



Source: RTE

FIGURE 21
RELATION BETWEEN LONG TERM AND MARKET CONTRACTS IN FRANCE
Import price vs. market price



Sources: Argus, MEEDDAT, Powernext

> Supplying the players

The supply structure for new market entrants has proved to be stable over time. It is balanced equally between imports and PEG purchases. Even if imports are mainly by incumbent French suppliers*, these release some of the imported gas to the PEGs, which is a significant source of supply for new entrants.

Since the end of the gas release* programme in the South zone, alternative suppliers* have increasingly made use of the North-South link to supply their customer portfolio in this zone. Supply in the south west zone is spread out between PEG purchases and supply from the South zone and, to a marginal extent, Spain. Overall, the end of the gas release programme has not prevented an increase in alternative suppliers' activity, whose share of the market in the south of France showed a strong increase between 2008 and 2009.

1.2. New monitoring indicators for wholesale markets published in 2009

As part of its mission to monitor wholesale gas and electricity markets, the CRE has published two new series of indicators. They show recent developments in the price of electricity and gas in France and a number of European markets. They also refer to market liquidity, observing trends in terms of volumes and the number of transactions made through brokers and electricity and gas exchange markets. They are now presented under the Electricity and natural gas market observatory issued by the CRE every quarter.

> Wholesale electricity market indicators

A first group of indicators gives the developments in electricity prices and a range of comparisons (base and peak day-ahead* and forward prices*, France/Germany...). A second group of indicators, designed to show market liquidity, gives the number and volume of transactions across a range of intraday*, day-ahead, monthly, quarterly and annual products. Finally, other indicators concern the market fundamentals and give information on the various production sectors (period of use and production rates for the nuclear, petroleum, coal and gas sectors) and the costs of the corresponding fuels. FIGURE 20 p. 82 gives an illustration of these indicators.

> Wholesale gas market indicators

A first group of indicators monitors the prices at the various PEGs in France: the North PEG, the South PEG and the South West PEG, and also compares development of North PEG prices against that recorded for Zeebrugge/Belgium, NCG/Germany and TTF/Netherlands. A second group of indicators shows the progress in volumes and number of transactions made by brokers or on gas exchange markets, and gives a comparison with major European hubs*. Finally, other indicators show the availability of gas infrastructures at the different entry points (Taisnières, Dunkirk and Obergailbach, and the Montoir and Fos-Tonkin LNG terminals) and their use taking account of the price differential between the markets in question. FIGURE 21 p. 82 gives an illustration of these indicators.

2. The CRE is helping to ensure the smooth operation of the retail markets

2.1. The CRE reports on the development of the retail markets for 2009

> The retail electricity market

As concerns the residential market, the opening up of the market:
- showed strong progress in the first half of 2009: +50% of contract customers*,
- slowed down slightly in the second half: +33% of contract customers (+21% between June and October 2009, followed by an exceptional increase of 55% between November and December 2009).

In total, 1,399,000 residential locations were on contract on the 31st of December 2009.

As concerns the non-residential market, the number of locations on contract went down by 5.5% in 2009 (i.e. 44,000 fewer locations). In total, 752,000 non-residential locations were on contract on the 31st of December 2009.

Even if markets are progressively opening up, they are still dominated by offers at regulated sales tariffs,

which still concerns 94% of customers (around 64% of total consumption).

A new supplier for residential customers has appeared, Proxelia, which brings to ten the number of suppliers for this type of customer. For non-residential customers, the number of suppliers remains unchanged at eighteen TABLE 8, FIGURE 22 p. 85.

> *The natural gas retail market*

The opening up of the residential market saw a distinct downturn over the second half of 2009:
- over the first half of 2009, the number of residential locations on contract increased by 24.6%,
- over the second half, the figure was only 8.8%.

In total, 1,144,000 residential locations were on contract on the 31st of December 2009.

The non-residential market continued to progress over 2009: the number of non-residential locations on contract increased by 15.5%.

In total, 243,000 non-residential locations were on contract on the 31st of December 2009.

Even if markets are progressively opening up, they are still dominated by regulated tariffs. On the 31st of December 2009, 88% of customers still had regulated gas tariffs, which amounts to 55% of total consumption.

Two new suppliers have appeared:
- for residential customers: Direct Energie (9 suppliers in total),
- for non-residential customers: A2A Trading, Direct Energie, Novawatt, Statoil ASA, Verbundnetz Gas AG (22 suppliers in total) TABLE 9, FIGURE 23 p. 87.

BOX 7
TOWARDS A NEW ORGANISATION OF THE ELECTRICITY MARKET

⇢ In November 2008, the Ministers for Economy and Energy set up a commission chaired by M. Paul Champsaur commissionned to make proposals for the organisation of the electricity market that would bring together consumer protection, the development of competition, finance for the investment required for electricity generation and grid development and incentives for saving energy. The commission went on to consult with the parties involved, during which period they interviewed the CRE.

⇢ In its report issued in April 2009, the Champsaur commission proposed a mechanism for organising the "transitory" market over ten years or so, and relating to areas up- and downstream of the electricity market and coordinated by "the same regulator (54) and the same institutional process":
- upstream: a right of access for suppliers to base electricity generation from the incumbent nuclear facilities at a regulated price reflecting the total costs of the incumbent nuclear facilities, including maintenance, extending the lifecycle of power plants, dismantling work and waste management. The quantities allocated to suppliers would be in line with the forecast customer portfolio in France,
- downstream: the removal of regulated tariffs for industrial consumers (TaRTAM*, all green tariffs, some yellow tariffs) and retaining regulated tariffs for small consumers, based on layering the underlying costs (regulated base + wholesale market for the rest of the supply + transportation + marketing). All suppliers could provide offers at regulated tariffs, and reversibility* would be total and sustained.

⇢ Based on this report, the government has drafted a bill to impose a right of access for suppliers to incumbent nuclear energy facilities.

(54) In the wider sense (independent regulatory authority, like the CRE, or government).

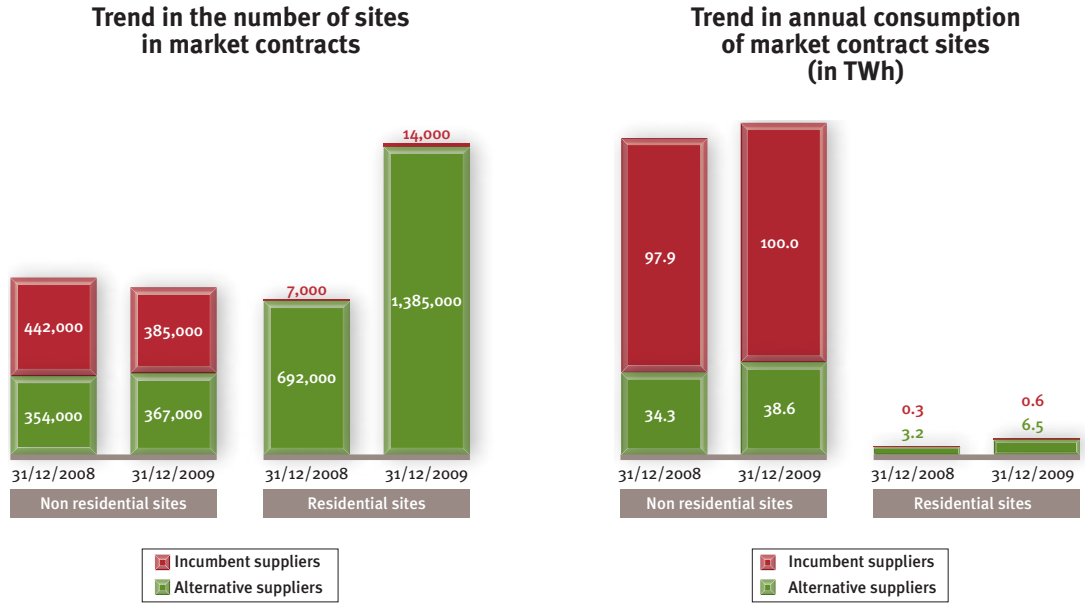
TABLE 8
ELECTRICITY: ASSESSMENT OF THE OPENING UP OF THE RETAIL MARKET (2008-2009)

	At 31st December 2008	At 31st December 2009	Change between 2008 and 2009 (%)
Residential sites			
Total number of sites	29,700,000	29,900,000	+0.7%
Number of sites in market contracts	699,000	1,399,000	+100%
Number of sites with an alternative supplier	692,000	1,385,000	+100%
(% of sites in market contracts)	(99%)	(99%) →	
Non residential sites			
Total number of sites	4,834,000	4,850,000	+0.3%
Number of sites in market contracts	796,000	752,000	-5.5%*
Number of sites with an alternative supplier	354,000	367,000	+3.7%
(% of sites in market contracts)	(44%)	(49%) ↗	

Sources: DSOs, RTE

* Fall due to the option given to a professional moving into a previously occupied site to request the benefit of a regulated tariff, even if the previous occupant had exercised his eligibility*.

FIGURE 22
ELECTRICITY: ASSESSMENT OF THE OPENING UP OF THE RETAIL MARKET (2008-2009)



Sources: DSOs, RTE

2.2. The CRE gives its opinion on regulated tariffs for the sale of electricity and gas

2.2.1. Regulated tariffs for the sale of electricity have developed in terms of level and structure

For the first time since the markets were opened up to competition, regulated tariffs for the sale of electricity saw, on the 15th of August 2009, a change in structure and increase in level: all of the fixed bonuses and variable prices for the various tariffs changed in different ways, giving a better reflection of the costs of the electricity system. In addition, the transport tariff contribution, designed to finance specific rights of the pension scheme for the electricity and gas industries, was excluded from the tariff pricing scales. The average level for regulated sales tariffs increased by 1.9% for blue tariffs, 4% for yellow tariffs and 5% for green tariffs.

Asked for its opinion, the CRE pointed out with some satisfaction that the planned tariff level meant that, for the first time, it would be possible to cover the book costs for supply for each of the blue, yellow and green categories.

It confirmed that the new structure resolved most of the anomalies arising from the failure to take account of tariffs for use of the public electricity distribution grids* when establishing tariff scales in the past. The change to the structure therefore improves the consistency of the tariff design, whilst preserving an awareness of the rational behaviour of customers in their choice of tariff.

However, the CRE was disappointed to find that the underlying methodology is based on the future costs for a plant adapted to national demand, which are unclear, uncertain and incompatible with new competition and electricity market rules. It recommends that, in future, these costs should reflect the economic conditions of actual interconnected plants.

In parallel, the CRE gave its opinion on the changes to the tariffs for the transfer of electricity to non-nationalised distributors* in terms of both level and structure. The change to the structure has brought the transfer tariff structure in line with that of regulated sales tariffs, still undergoing change. In spite of the 5.6% increase, the transfer tariff level remains far below the corresponding total cost of energy production. Given that the expected increase moves towards this objective, the CRE declared itself in favour of the change in transfer tariffs.

2.2.2. The regulatory framework for regulated natural gas sales tariffs has been modified

2009 was marked by the adoption of the Decree dated the 18th of December 2009 BOX 8 p. 89, defining a new regulatory framework for movements in regulated sales tariffs for GDF SUEZ gas, local distribution companies* (LDCs) and TEGAZ. This Decree applies to tariffs for public distribution and subscription tariffs.

Nevertheless, for each supplier, this Decree does not come into force until an Order setting the tariffs for applying the Decree is adopted. At the end of December 2009, only the Order regarding the tariffs for public distribution by GDF SUEZ had been published.

Under the Order dated the 27th of March 2009, the tariffs for public distribution by GDF SUEZ were reduced on average by €0.528 cents/kWh as of the 1st of April 2009 (i.e. -11.3%). The CRE declared itself in favour of this change to the tariff.

Since that date, tariffs have been frozen, in spite of developments in supply costs estimated using the GDF SUEZ formula. An Order published on the 21st of December 2009 provides for an average increase of costs excluding supply of €0.243 cents/kWh on the 1st of April 2010.

Changes to subscription tariffs, which saw an increase in the second half of 2009 after a sharp drop in price in the first half, were viewed favourably by the CRE FIGURE 24 p. 89.

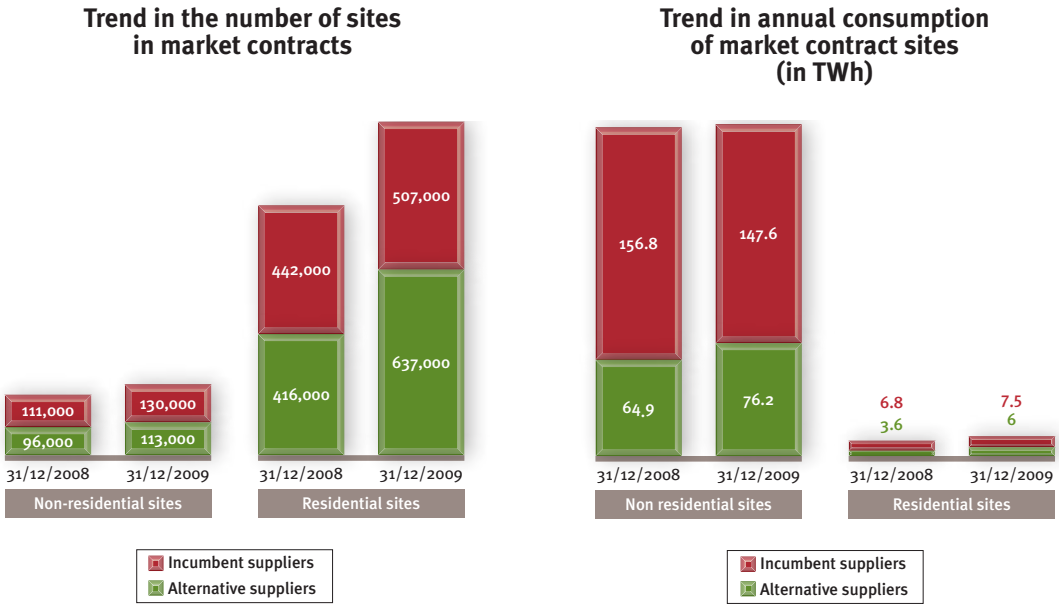
For 2009, CRE was asked to give its opinion on 89 draft pricing scales for public distribution tariffs and LDCs subscription tariffs. It issued unfavourable opinions on certain pricing scales, particularly for the tariff change on the 1st of July 2009, mainly because of the failure to take account of new user tariffs for public distribution grids applicable as of the 1st of July 2009.

TABLE 9
GAS: ASSESSMENT OF THE OPENING UP OF THE RETAIL MARKET (2008-2009)

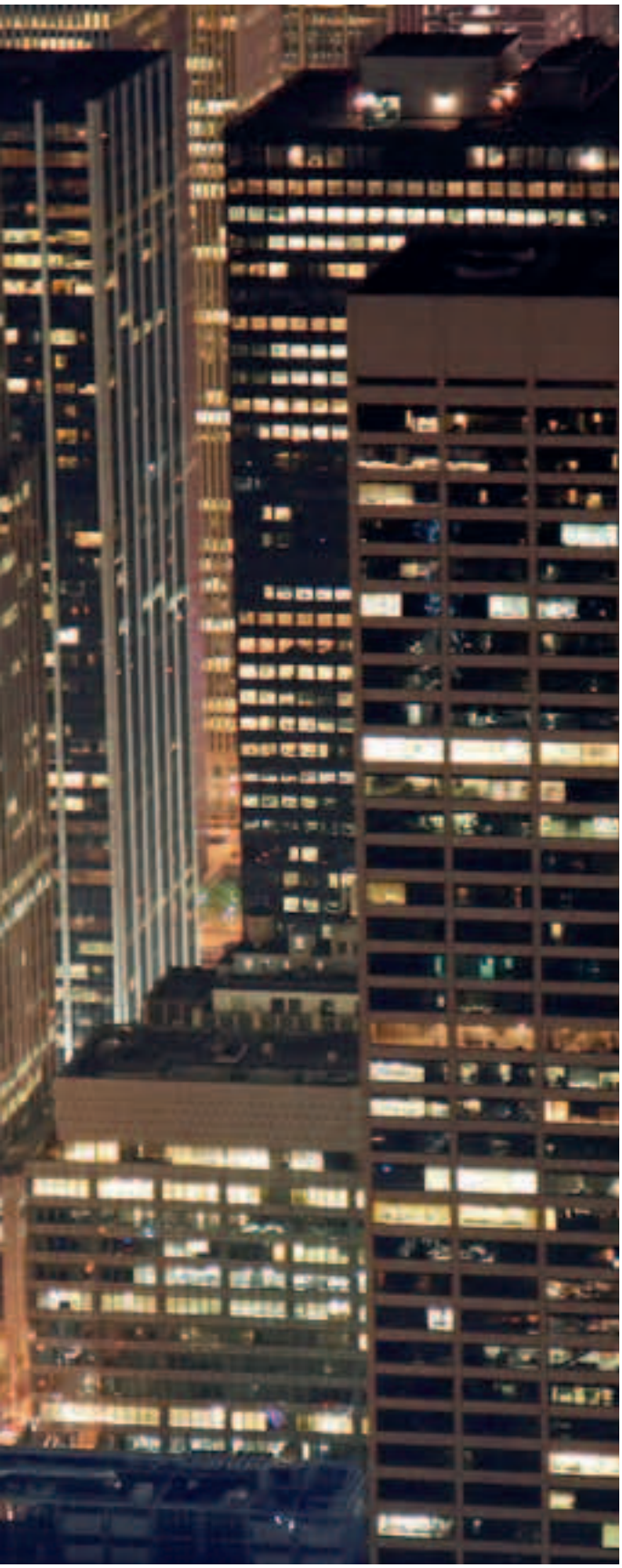
	At 31st December 2008	At 31st December 2009	Change between 2008 and 2009 (%)
Residential sites			
Total number of sites	10,800,000	10,790,000	-0.1%
Number of sites in market contracts	858,000	1,144,000	+33.3%
Number of sites with an alternative supplier	416,000	637,000	+53.1%
(% of sites in market contracts)	(48%)	(56%) ↗	
Non residential sites			
Total number of sites	681,000	685,000	+0.1%
Number of sites in market contracts	207,000	243,000	+17.4%
Number of sites with an alternative supplier	96,000	113,000	+17.7%
(% of sites in market contracts)	(46%)	(47%) ↗	

Sources: DSOs, TSOs

FIGURE 23
GAS: ASSESSMENT OF THE OPENING UP OF THE RETAIL MARKET (2008-2009)



Sources: DSOs, TSOs



The TEGAZ subscription tariffs, covered by the framework of the Order dated the 21st of December 2007, have changed every three months, following the same overall trend as those of GDF SUEZ.

2.3. The CRE manages the compensation mechanisms for the charges paid by the suppliers

2.3.1. The electricity public service charges are inscreasing considerably

The contribution to the public electricity service finances the charges paid by EDF, LDC and Électricité de Mayotte arising from:

- support measures for renewable energy* and cogeneration* (buy-in obligation*, purchasing contracts prior to the Law dated the 10th of February 2000 and calls for proposals),
- the tariff equalisation in favour of non-interconnected zones* to the mainland electricity grid (Corsica, overseas départements, Mayotte, Saint-Pierre and Miquelon and the Molène, Ouessant, Sein and Les Glénans islands off Brittany),
- applying tariffs for electricity as a basic commodity and the mechanism set up in favour of people in a situation of financial uncertainty.

The contribution to the public electricity service also finances the budget for the national energy ombudsman. If it reaches a level below €4.5/MWh, it will also finance part of the charges related to the transitional regulated tariff for balancing markets (TaRTAM), limited to €0.55/MWh, without being able to exceed this value, in application of the Law dated the 7th of December 2006.

The contribution to the public electricity service is levied in proportion to the volumes of electricity consumed in France, but subject to the following restrictions:

- exemption for self-producers of consumptions subject to a contribution of 240 GWh,
- contribution to the public electricity service ceiling of €500k per consumption site,
- contribution to the public electricity service ceiling at 0.5% of value added for industrial companies consuming in excess of 7 GWh.

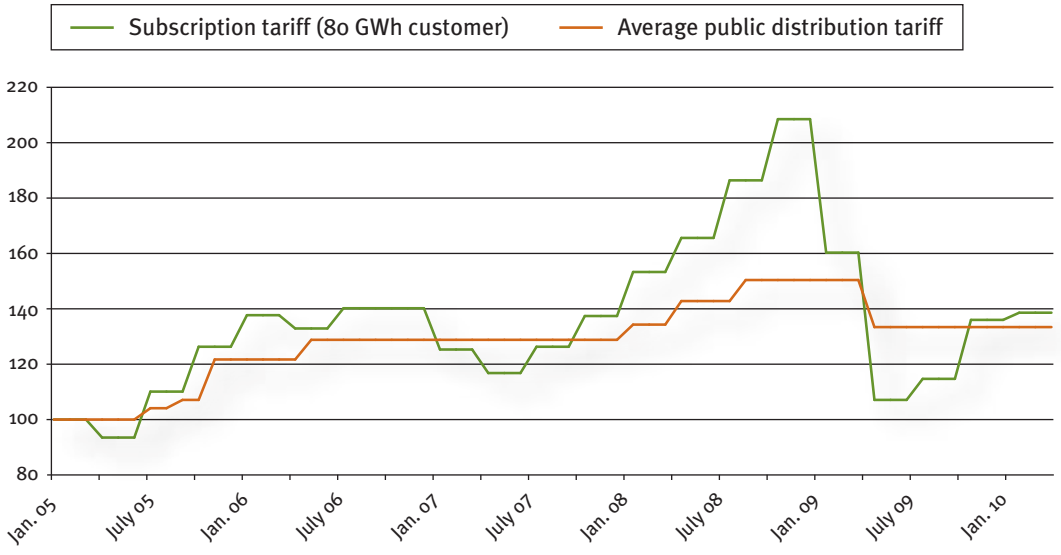
Before the 15th of October each year, the CRE evaluates the total charges for the coming year for the

BOX 8
THE NEW REGULATORY CONTEXT FOR THE REGULATED SALES TARIFFS FOR NATURAL GAS

2009 saw several major changes in terms of regulated natural gas sales tariffs. A new Decree and new Order appeared in December 2009, complementing the existing framework.

- The Decree dated the 18th of December 2009, abrogating the Decree dated the 20th of November 1990 relating to regulated natural gas sales tariffs, provides that, for each supplier, an Order issued by the Ministers for the Economy and Energy adopted subject to the opinion of the CRE sets the pricing scales for the regulated tariffs. These pricing scales are reviewed at least once a year. When the Order concerning it is published, a supplier is authorised to ask the CRE for tariff changes within the year in order to reflect variations in the cost of natural gas supply. In its opinion on the draft Decree issued on the 24th of July 2008, the CRE observed that this text would put an end to the various procedures existing depending on the tariffs in question. It considered that the new procedure would be more flexible and transparent, in that it gave wider responsibility to both suppliers and the CRE. The CRE also thought it necessary for the Decree to provide for a revision of the tariffs at least every 1st of July, and set a frequency of once a quarter for revisions within the year, which was not adopted in the final version of the Decree.
- An Order dated the 21st of December 2009 set the conditions for changing the regulated sales tariffs for public distribution by GDF SUEZ. This Order defines the formula for estimating the change in supply costs for GDF SUEZ. It provides that the scales that came into force on the 1st of April 2009 would not change on the 1st of January 2010 and that charges excluding supply would increase by €0.243 cents/kWh on the 1st of April 2010 compared to the 1st of April 2009.

FIGURE 24
COMPARISON OF AVERAGE TRENDS IN SUBSCRIPTION AND PUBLIC DISTRIBUTION TARIFFS FOR GDF SUEZ FROM 2005 TO 2010 (BASE 100, JANUARY 2005)



Source: CRE

public electricity service, the number of kWh subject to contribution and the resulting level of the contribution to the public electricity service, FIGURE 25.

2.3.1.1. The buy-in obligation is the first charge item recorded for 2008

The CRE evaluated the total charges recorded for 2008 based on the declarations made by suppliers. This figure amounts to €1,837.8M, of which €881.6M was for buy-in contracts in mainland France, of which over €828M was for purchases from the cogeneration sector, €897.5M for tariff equalisation and €58.7M for social provisions. The charges relating to tariff equalisation are increasing each year, mainly because of the growth in consumption and the cost of fuel, which were particularly high in 2008.

2.3.1.2. The mainland buy-in obligation will remain the main charge item in 2010, given the development of the wind and photovoltaic energy sectors

The CRE evaluated the total charges forecast for 2010 based on the charges recorded in 2008, but also on forecasts from suppliers. The charges forecast for 2010 show a clear increase compared to 2008, affected by the anticipated reduction in market prices, which, with the sustained development of renewable energy, will lead to a significant increase in the charges relating to the buy-in obligation. These charges are evaluated at around €1,240M, including €528M for renewable energy FIGURE 23 p. 91.

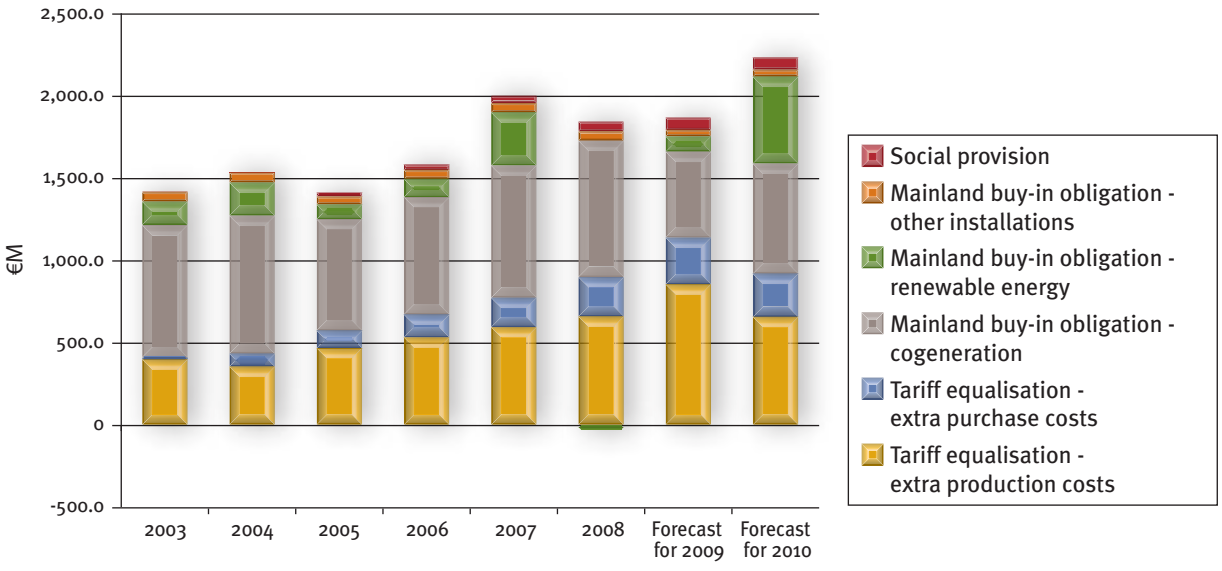
The charges related to tariff equalisation are also increasing, amounting to €918M. This progression can be explained in particular by an increase in consumption, an increase in purchasing costs and the acquisition costs for greenhouse gas emission quotas, but also by taking accelerated depreciation into account.

Charges related to social provisions are also increasing, affected by the expected increase in the number of beneficiaries of the basic needs tariff. The corresponding charges are now at €75M (as against €58.7M recorded for 2008).

2.3.1.3. The unitary contribution required in 2010 to cover charges has risen to €6.51/MWh

The contribution required to cover public service charges in 2010 has been evaluated at €6.51/MWh, thereby going above the ceiling set by Law, equivalent to 7% of the base regulated sales tariff of 6 kVA (excluding subscription), i.e. €5.48/MWh. Until an Order sets the contribution to the public electricity

FIGURE 25
TRENDS IN CHARGES BETWEEN 2003 AND 2010



Sources: EDF, EDM, LDC

service for 2010, the 2009 one will remain applicable, i.e. €4.5/MWh.

2.3.1.4. Value added ceilings are showing a clear increase

Article 67 of the Law dated the 13th of July 2005 limits the amount of contribution to the public electricity service paid by an industrial company for any year at 0.5% of its value added in the same year. Under the Order dated the 22nd of December 2008, the regulatory period for making a request for reimbursement of the contribution to the public electricity service from the CRE for year N has been moved to the 31st of December of N+1.

In 2008, 308 industrial companies requested a reimbursement relating to this ceiling, making a total of €53M. They numbered 424 in 2009, and the amount reimbursed was €62.4M.

The above article allows an industrial company, where it considers that the contribution to the public electricity service paid is above the ceiling amount owed for the previous year, to request that the contribution to the public electricity service is no longer billed to it. 25 companies used this provision in 2008 and 23 in 2009.

2.3.2. The special solidarity tariff for gas attracts a specific contribution

The charges paid by suppliers of natural gas relating to the implementation of the special solidarity tariff (tariff for people on a low income) are financed by a contribution paid by suppliers of natural gas based on the kWh invoiced to end consumers. This contribution is reflected in the suppliers' sales prices. The mechanism for reimbursing these charges, very similar to the one for the electricity public service charges, is stated in Decree n° 2008-779 dated the 13th of August 2008.

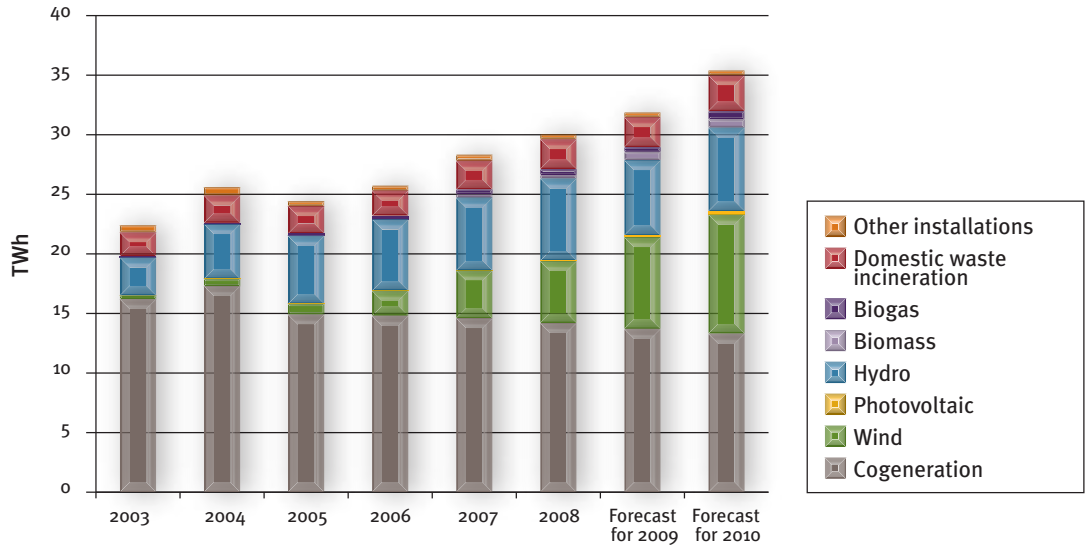
The only exemptions are kWh invoiced to electricity production installations or combined heat and power plants. 4.7 TWh was exempt in 2008.

The unit contribution for 2010, proposed by the CRE at €0.045 /MWh, was implemented in an Order issued by the Minister for Energy on the 28th of October 2009.

2.3.2.1. The charges recorded for 2008 are clearly lower than expected

The charges recorded for 2008, the first year the mechanism was implemented, amounted to €5.3M.

FIGURE 26
CHANGES IN PURCHASE VOLUMES ON THE MAINLAND BETWEEN 2003 AND 2010



Sources: EDF, LCD

This is a much lower figure than CRE had proposed in an estimate in its deliberation of the 13th of November 2008, and which the Minister had issued in an Order dated the 17th of December 2008 (€12.8M). This situation can be explained by a lower number of beneficiaries of the special solidarity tariff than expected, especially for those with a right to collective heating.

2.3.2.2. The charges forecast for 2010 are increasing with the number of beneficiaries

The charges forecast for 2010 have risen to €28.5M, affected by the large increase in the number of beneficiaries observed in the first half of 2009 and expected for subsequent months.

2.3.2.3. The charges notified to suppliers for 2008 have been fully reimbursed

The charges that the CRE notified to suppliers of natural gas for 2008 have been fully reimbursed. Under a nominal regime, charges for year N are reimbursed to suppliers in two instalments, one on the 31st of July of year N and the other on the 31st of January of year N+1. However, in 2008, given the date when the mechanism came into force, charges were fully reimbursed on the 31st of January 2009.

2.3.3. The charges related to the TaRTAM remain very high

The TaRTAM has been in force since the 30th of June, in accordance with the Law relating to the modernisation of the economy dated the 4th of August 2008.

For 2009, the EDF and the Compagnie Nationale du Rhône unit contribution was set by an Order dated the 9th of April 2009 at €2.6 /MWh, in accordance with the proposal issued by the CRE on the 9th of October 2008.

On the 8th of October 2009, the CRE issued to the Minister for Energy, its proposal relating to the amount of charges forecast and unit contribution for 2010. Forecast charges were estimated at €361.7M. Given that the contribution to the public electricity service for 2010 could not contribute to financing it, the unit contribution owed by EDF and the Compagnie Nationale du Rhône on their nuclear and hydraulic energy production should therefore pay for the whole amount, which is €0.8/MWh.

BOX 9
CHANGES TO THE PRINCIPLES FOR CALCULATING THE COST AVOIDED* BY THE BUY-IN OBLIGATION

Until 2009, the CRE calculated the provisional charges to be paid by EDF for the following year related to the buy-in obligation in mainland France, basing its calculation of the cost avoided by the corresponding electricity generation on costs observed on the fixed-term markets. The final calculation of the avoided costs, and consequently the charges actually recorded, two years later, was itself based on the day-ahead market prices. The price volatility observed on this market over several years led to discrepancies, often major ones, between charges forecast for one year and the charges recorded for the same year and, consequently, the unit contribution that was to be paid by all end consumers of electricity.

In order to ensure the best level of consistency between the charges forecast and those actually recorded, and to limit the variations in the unit contribution required to cover public service charges, the deliberation of the CRE dated the 25th of June 2009 changed the principles for calculating the cost avoided by the buy-in obligation paid by EDF. From now on, a quasi definite proportion of generation under the buy-in obligation is defined for installations with a contract without any differentiation between the time of year/day. The cost avoided by this quasi definite proportion is calculated by referring to the prices of fixed-term products in France observed on EEX Power Derivatives. The costs avoided by the random proportion of the buy-in obligation are still calculated with reference to the day-ahead prices for France observed on EPEX Spot.

2.4. The CRE organises the consultation to improve the operation of retail markets

On the 29th of October2009, the CRE deliberated on work carried out since July 2008 by the Consumer working group (GTC), the Electricity working group (GTE) and the Gas working group (GTG).

Since they were created, these groups, under the aegis of the CRE, have defined operating procedures shared by all professionals in the sector. More than two years after the markets were opened up to competition, most of the procedures set up (change of supplier, commissioning, cancellation...) have proved to be effective. Any changes made are evidence of continuous improvement, such as the progressive reduction of the period for changing supplier to ten days, rather than a revision of the initial rules.

2.4.1. Consumers are involved in consultation

Consumers are regularly informed about matters that concern them, such as current laws and regulations, quality of service indicators for system operators, the activity of the Énergie-info initiative and any other current issues affecting the mass market.

The work of the GTC is contributing to better consumer protection. A workshop was set up with a view to ensuring the follow-up of the implementation by suppliers of any recommendations for good practice in terms of commercial communications arising from the GTC's earlier work.

The national energy ombudsman was involved in the consultations and presented its recommendations in generic terms. On this occasion, the GTC was able to guide thinking on customer procedures and make suggestions for improvement to technical groups.

Finally, consultation on the changes to the procedure for any objection with regard to a change of supplier could not be started in the 1st half of 2009 because of disagreements between the parties concerned. On the 2nd of July 2009, the CRE deliberated on the principles for finding an amicable solution to the issue of making corrections to changing supplier where subscription is refused. In particular, it recommended that the supplier under dispute should not bill transportation costs to the consumer during the period of dispute.

These principles formed the basis for the development of a procedure applicable to gas and electricity by the GTC. However, two parties remained opposed and declared that they would not apply it.

2.4.2. Consultation bodies have changed the rules according to which the market operates

A notable improvement in terms of market fluidity has been brought to the "change of supplier" procedure for gas and electricity: the technical period has been reduced from 21 to 10 days by ERDF, GrDF and Régaz. The other distribution system operators* (DSOs) will incorporate the change in line with the pace at which they adapt their information systems.

Further improvements to customer procedures have resulted from work done by the GTE and the GTG:
- for electricity: adaptation of the key usage procedures during Linky experiments,
- for electricity: definition of operating methods for moving from the portfolio of a failing supplier to a back-up supplier,
- for gas: incorporation into the "Transfer for failure to pay" procedure of the provisions under the Decree dated the 13th of August 2008 relating to the procedure applicable for unpaid bills, which sets the conditions under which the DSO can cut off supply,
- for gas: adaptation of two procedures in order to promote greater frequency of customers taking their own readings: "Removal of point following cancellation of supply contract*" and "Transmission of a customer meter reading index for customers with six-monthly reading cycles if no cyclical meter reading system is in place".

In addition to this, to simplify the handling of customer complaints brought to ERDF by suppliers, improvements to the SGE tool – the system for data exchange between ERDF and suppliers – have been agreed between the parties concerned. Also, two indicators have been set up to measure the quality of communication between the supplier and the distributor when a complaint is made.

For electricity, in accordance with the new rules governing profiling*, the profiling governance committee was set up at the start of 2009 in order to ensure consultation on developments in profiling systems instead of the GTE profiling monitoring committee. The profiling monitoring committee, under the aegis of the ERDF, regularly informs the GTE of the progress of its work.

Also, in order to follow the performance and improvements of the information systems used by the DSOs to reconstitute flows, a working group entitled "Continuous improvement and information systems for flow reconstitution" was launched in 2010. It is directly attached to the GTE.

For gas, a specification aimed at providing a framework for changes to profiles has been devised. Application of this has led to the renewal of the profiles currently in place for the period running from the 1st of April 2010 to the 31st of March 2011. In 2010, consultation groups will establish a new way of constructing these profiles.

2.4.3. Information systems need to adapt to changes in the market rules and future challenges

The monitoring of problems related to information systems is a priority for the CRE.

> ERDF and GrDF information systems

For electricity, apart from work to continuously improve current information systems and to bring them into conformity with the provisions in force, ERDF provided suppliers with its key objectives and schedule for rolling out the Syclade programme, which is designed to give more depth to distributor information systems in preparation for the arrival of advanced meters. The programme is organised over five stages. The first stage went into production in July 2009 and concerns all segments of the market.

For gas, in conformity with its recommendations from the deliberation on the 25th of September 2008, the CRE has noted improvements in consultation procedures and communications between GrDF and suppliers. In particular, a chart showing how OMEGA is working is issued each month by GrDF to the parties involved. This has made it possible to see almost continuous progress in system performance throughout 2009. Since December 2009, all GDF SUEZ professional customer flows transit via OMEGA. In terms of private customers, it is planned to stop direct display of metering data by 2011.

The separation of customer management bases between ERDF and the incumbent supplier EDF is in accordance with initial planning. By the end of 2009, most professional customers on the Blue tariff had migrated. Residential site migration continued in 2009, and should accelerate in 2010.

> Local distribution companies information systems

In the summer of 2009, the CRE conducted a survey of the LDCs with the highest number of gas and electricity customers on information exchange methods between suppliers and DSOs. Even though there are still some discrepancies that need to be absorbed in a transparent way, the CRE noted that efforts had been made to give the parties involved consistent terms of access to the markets across the national territory.

2.5. Alongside the national energy ombudsman, the CRE is contributing towards providing consumer information

2.5.1. There is still a lack of consumer information

In 2009, as in preceding years, two attitude sounding studies were carried out in order to test consumer views on the opening up of the markets. One study was for private customers and the other was for professional ones. The task was assigned to LH2, and was the third version of the study for residential customers and the fifth for non-residential customers. These surveys are part of the Énergie-info initiative financed jointly by the CRE and the national energy ombudsman.

A sample of 1,500 households for residential customers and 1,501 private and public companies for non-residential customers were interviewed by phone during September and October 2009.

In 2009, energy consumption was still a major topic of concern for 74% of residential customers and 54% of non-residential customers. Whereas eight out of ten professional customers were aware of their right to change supplier, only 36% of residential customers were similarly aware. Fewer than one consumer in two, either private or professional, felt they were well informed of their rights in terms of energy, and fewer than three consumers out of ten stated that they knew what to do to change supplier (data stable in relation to previous years).

The number of consumers aware of the option to return to the incumbent supplier having previously changed supplier has remained stable compared to 2008. For private customers, this number rose to 70% on the electricity market and 63% on the natural gas market. 70% of professional customers were aware of the option to return to the incumbent electricity supplier having previously changed supplier, this figure being of 73% for gas. Nevertheless, most people had little idea of how to go back to the incumbent supplier, especially for gas. Only 24% of residential customers were aware of the fact that they could not return to gas on regulated tariffs.

2.5.2. The Énergie-Info initiative is the only information gateway for consumers

Consisting of a web site and a consumer information service, the Énergie-Info initiative is designed to be the point of reference for independent customer information for private and small business customers [55] on the opening up of the electricity and gas markets and consumer rights/procedures.

Set up in May 2007 for private customers, then in September 2008 for professional customers, the web

(55) Consumers subscribing to an electrical power less than or equal to 36 kVA or consuming less than 30,000 kWh of natural gas per year.

site at www.energieinfo.fr was developed by the CRE and the national energy ombudsman in collaboration with the General Directorate for Energy and Climate (DGEC) and the General Directorate for Competition Policy, Consumer Affairs and Fraud Control (DGCCRF).

The site had 535,000 hits in 2009, with an average of 45,000 per month. This represents a 50% increase in the number of hits compared to the previous year. Private consumers are well aware of the site, but only 5% of total hits are from professional customers.

In the section dedicated to private customers, the pages under the heading entitled "Hands-on" alone attracted 63% of hits. The supplier search engine based on post code, which was launched in September 2008, accounted for 38% of hits on the site. The offer comparison tool added in November 2009 has already had 93,000 hits in just under three months, BOX 10 p. 97.

Throughout 2009, content on the www.energieinfo.fr site was updated with information on taxes and the role of grid operators and suppliers.

The consumer information service consists of a call centre for answering simple questions on the opening up of the market and the rights and procedures for electricity and natural gas, plus an expert team for answering complex issues and giving advice on procedures for consumers who have a dispute with regard to their energy supply. With around 441,000 calls taken in 2009 (56), the telephone is still the channel preferred by consumers for getting in touch with the Énergie-Info service. Other communication channels available to consumers are fax, letter and email, accounting for 0.5% of enquiries.

Handled by an interactive voice server accessible 24/7, 52% of calls are to find supplier contact details. Throughout 2009, around 168,000 consumers received a personal response to their questions from an Énergie-Info adviser (response by phone, letter or email, depending on the channel selected by the consumer). The consumer information service handled 6,900 complex requests, i.e. 4.1% of personal contacts. Complex requests, especially for help with disputes, are followed up on a case by case basis. Énergie-Info advisers assess the situation of each consumer and tell them about the procedures they can follow to resolve their dispute, and also about their rights.

Under the Law dated the 12th of April 2000 relating to relations between public citizens and administrative bodies, consumers are directed towards the competent authorities for handling their dispute: depending on the case, it might be the DGCCRF (infractions of the consumer code, failure of the supplier to meet its legal obligations...), or the national energy ombudsman (disputes between small consumers and suppliers arising from the execution of a supply contract).

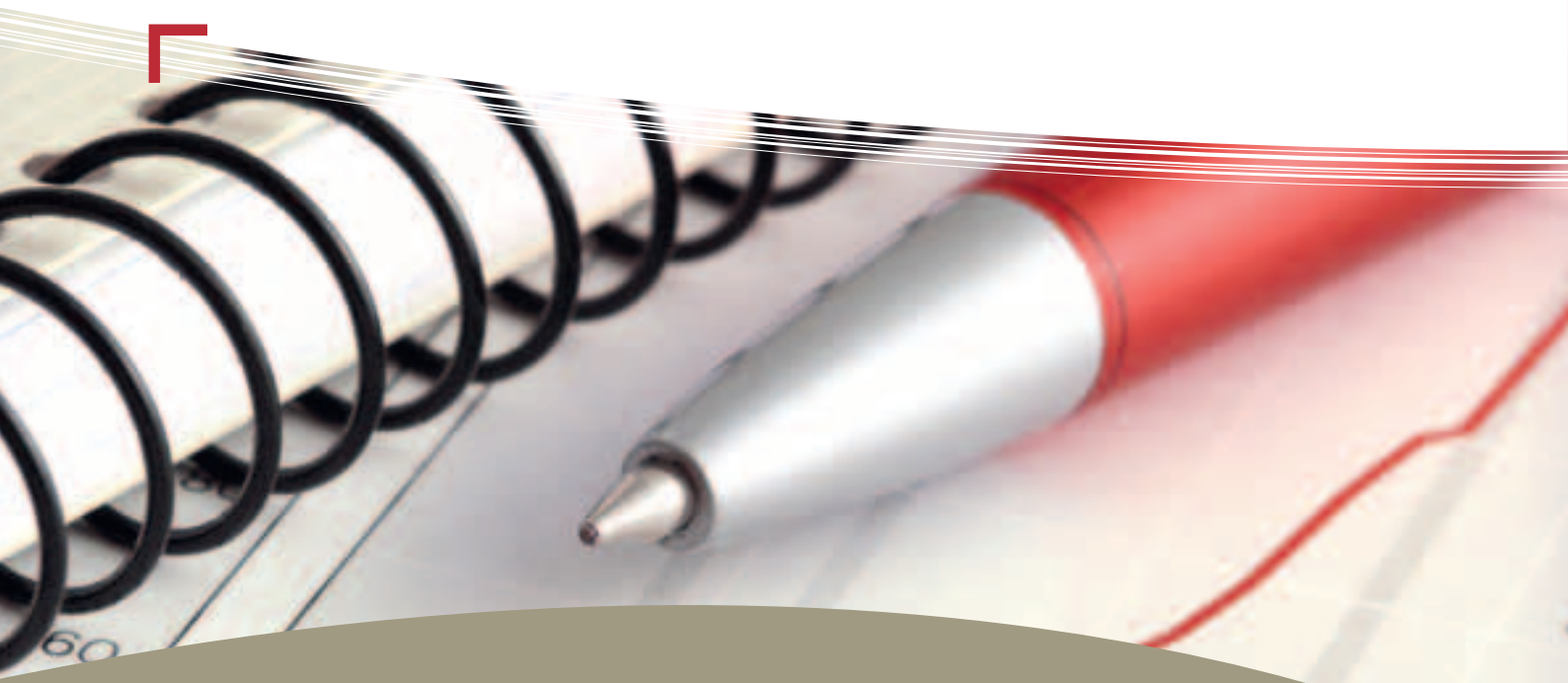
Throughout 2009, complaints about sales calls and subscription refusals accounted for 36% of requests for help handled by the internal team of experts. The number of requests relating to unexplained cancellations accounted for 28% of requests recorded by the same team. Other reasons for "complex" requests for assistance were related to energy billing (especially the level of interim bills produced from estimated indexes), customer quality of service, problems with grid connection* starting up the energy supply and cancellation of a contract.

Since the 1st of July 2007, over 1,100,000 consumer enquiries have been handled by the Énergie-Info information service.

(56) On the Azur number 0 810 112 212.

BOX 10
THE OFFER COMPARISON TOOL: A NEW WAY TO MAKE A COMPLETELY TRANSPARENT CHOICE

- Private and professional consumers still have little understanding of the implications of the opening up of the markets: grid operator responsibilities, supplier roles and new players in particular remain abstract concepts to consumers. This lack of awareness creates a sense of confusion and anxiety in customers, for whom energy supply is a major concern.
- Based on this information, the CRE and the national energy ombudsman have provided a comparison tool for electricity and natural gas offers as part of the Énergie-Info initiative.
- Neutral and independent, the Énergie-Info offer comparison tool is the result of a long process of consultation with energy sector stakeholders. Studies of private and small business consumers have also been conducted upstream in order to evaluate needs and expectations.
- The Énergie-Info offer comparison tool covers electricity and/or natural gas offers provided and detailed by willing energy suppliers and in line with an operating charter. The CRE and the national energy ombudsman stand as guarantors that this charter will be followed. Uploaded to a secure extranet system, offers can be updated by suppliers at any time. Contract and subscription offers are included in the comparison tool.
- Accessible from the www.energie-info.fr and www.cre.fr web sites, the offer comparison tool is a teaching tool that enables consumers to find out about and familiarise themselves with the new market situation. The educational objective is achieved in two ways:
  - by providing consumers with the key information they need in order to have better access to and understanding of the opening up of the markets. There are lots of contextual pointers to guide users during their comparison session. Consumers will find answers to all their questions, especially: “Who does what?” and “What are the similarities and differences between suppliers?”
  - by providing an easy and full comparison of market contracts*. Much more than a simple price comparison mechanism, this offer comparison tool details all the essential features of the offers in the form of tables or comprehensive descriptions: whether prices are regulated or not, commitment period, terms for cancelling the contract, services, etc.



Appendices

*Words followed by * are defined in the glossary p. 113*

1. Summary of the principal deliberations of the CRE from the 12th of February 2009 to the 17th of December 2009

Proposal for an Order Commission of the 12th of February 2009 in accordance with IV of article 4 of the law no. 2000-108 of the 10th of February 2000 relating to the modernisation and development of the public electricity service

In application of the provisions of the third paragraph of IV of article 4 of the law no. 2000-108 of the 10th of February 2000 relating to the modernisation and development of the public electricity service, the CRE has made a proposal relating to the application of the first paragraph of the same IV which stipulates that the "public electricity transmission and distribution system operators* implement the provisions allowing suppliers* to offer their customers differentiated tariffs according to the period of the year or time of the day and encouraging the users of the grids to limit their consumption during periods when general consumption is the highest".

The provisions mentioned above rely, particularly, on the setting up of advanced metering systems. The proposal of the CRE, that details the objectives of the metering* devices, was established after:

- public consultation during the course of June 2008,
- hearing of the stakeholders (representatives of consumers, generators* and suppliers of electricity, grid operators, collectivities organising public distribution, public authorities and other players that participated in the consultations) on the 10th of July 2008,
- publication of the report on the responses to the public consultation on the 15th of October 2008,
- consultation with the players that took part in the public consultation during December 2008.

Deliberation of the 26th of February 2009 relating to the appropriate accounting rules of the suppliers bearing the costs of the transitional regulated tariff* for balancing markets*

The electricity suppliers supplying customers at the transitional regulated tariff for balancing markets* (TaRTAM) who establish that they are not able to produce or acquire the quantities corresponding to a tariff less than the part corresponding to supply at the TaRTAM, receive compensation for the corresponding costs, defined in article 30-2 of the law of the 9th of August 2004 and article 3 of the Order of the 4th of May 2007 relating to the compensation for the costs of the TaRTAM.

These costs are evaluated by the CRE on the basis of declarations from the suppliers, drawn up using an appropriate accounting system for which the CRE defines the rules, in compliance with the article of the aforementioned law of the 9th of August 2004. The rules take into account subsequent regulatory changes since those defined by the deliberation of the CRE of the 12th of December 2007. They are applied to all monthly, quarterly and annual declarations sent to

the CRE, as from the date of the present deliberation. It is expected that the suppliers keep and make permanently available to the CRE, for four years, the information justifying the data sent.

*Proposal of the 26th of February 2009 relating to the tariffs for use of the public electricity transmission and distribution grids**

In accordance with the provisions of article 4 of the modified law no. 2000-108 of the 10th of February 2000, the CRE, on the 26th of February 2009, proposed new tariffs for use of the public electricity grids (TURPE 3), replacing the tariffs in force (TURPE 2) to the Ministers for the Economy and Energy.

The new tariffs for use of the public electricity grids proposed by the CRE that came into force on the 1st of August 2009 are a response to the challenges facing the electricity grids: controlling the costs of transportation, reinforcing the quality of supply* and limiting peaks in consumption.

The CRE has granted an increase in revenue to the grid operators, spread over four years, to meet the challenges in terms of quality of service and the securing the grids.

On the 1st of August 2009, the tariffs increased by 3% for low and medium voltages, and 2% for high voltage. Over the next three years, the annual change in these tariffs will keep pace with inflation, increasing by 1.3% and 0.4% respectively. Moreover, the deviation between forecast and real uncontrollable costs and receipts (for example, losses* and investments) will be taken into account in the change in tariffs, within a range of -2% to +2%. Grid operators will now be rewarded if they achieve gains in productivity on the controllable costs. To prevent these gains from deteriorating quality, the grid operators are also rewarded if they manage to reduce average cut-off time.

These new prices encourage customers to reduce consumption peaks that emit large amounts of CO_2, in compliance with the guidelines of the Grenelle de l'environnement. Indeed, the difference between peak tariffs and off-peak tariffs for low and average voltage has been increased.

Tariff proposal of the 2nd of April 2009 for the use of the public natural gas distribution networks

In its deliberation of the 2nd of April 2009, the CRE proposed new tariff scales for use of the public natural gas distribution networks operated by the local distribution companies* (LDCs) to the Ministers for the Economy and Energy; they were approved by the Order of the 24th of June 2009 and have been in force since the 1st of July 2009.

These tariffs, developed by the CRE, introduce, for the eight LDCs that pay a special tariff, a regulatory framework that is identical to that defined for GrDF in its scale, coming into force on the 1st of July 2008, in application of the Order of the 2nd of June 2008. They reduce the risks to which the operators are exposed without change to the current tariff scale:

- the period of application of the tariffs is four years, with a tariff scale that is revised every year on the 1st of July, proportional to inflation, and an annual change factor that is specific to each LDC,
- a financial incentive mechanism has been introduced to improve the quality of the service offered by the LDCs,
- a mechanism to correct deviations has been introduced, guaranteeing the operators their expected revenues for transportation, in accordance with the quantity of gas distributed.

The regulatory framework applicable to the 14 LDCs that do not present separate accounts and pay a common tariff, is similar to that applied to the other LDCs.

Several structural factors explain the changes in tariffs for the LDCs, which had remained unchanged since the 1st of January 2006. The accelerated reduction of grey cast iron in 2006 and 2007 and the reform of the pension scheme for the electricity and gas industries have tended to push tariffs up for the LDCs. The rise in

the number of customers connected and the volume of gas distributed (the rate of increase has slowed down and even a fallen for some LDCs) can no longer compensate for the increase in costs described above.

Taking into account the changes in the financial environment and the reduction of risks for the LDCs that the new regulatory framework has introduced, the rate of remuneration on invested capital has fallen from 7.25% to 6.75%.

These pluriannual tariffs should give all the players in the market better visibility of tariff changes and assist in the development of competition on the LDCs' territory.

Deliberations approving the rules for capacity allocation at French interconnections*

Article 30 of the 3rd rider, dated the 30th of October 2008, to the convention of the 27th of November 1958 and granting the public electricity transmission grid to RTE EDF Transport SA, adopting the drafting of the Order no. 2006-1731 of the 23rd of December 2006 that approves the model terms and conditions for concession of the public electricity transmission grid, has given the CRE new power to approve the rules relating to capacity allocation at French interconnections submitted by RTE.

The CRE has for the first time used its power, on the 16th of April 2009, to approve the rules for the allocation of capacity for the France-Spain interconnection.

Then, on the 25th of June 2009, the CRE approved the rules for the allocation of capacity for the France-Italy interconnection.

On the 3rd of September 2009, the CRE approved:
- the allocation rules of the Central-West region,
- the intraday* capacity allocation rules for the France-Germany interconnection,
- the intraday capacity allocation rules for the France-Belgium interconnection,
- the Import/Export rules,
- the rules for the France-Switzerland interconnection,
- the rules for the France-England interconnection.

On the 10th of December 2009 the CRE approved the new France-Italy rules.

The proposal for the allocation rules for the Central-West region is in line with a move towards harmonisation and improvement of the rules of capacity allocation, directed by the regulators, within the Central-West region (France, Germany, Belgium, Luxemburg, Netherlands). This move towards harmonisation and improvement has been completed by the creation of the first regional operational platform for allocating capacities in Europe (CASC-CWE), forming a unique point of contact for the allocation of interconnection capacities.

The CWE rules for the allocation of annual, monthly and daily capacities, drafted jointly by RTE and the GRTs of the CWE region replace three sets of existing rules:
- the France-Germany rules,
- the France-Belgium rules,
- the rules for the borders of the Netherlands with Germany and Belgium.

The main characteristics of the harmonised set of rules are:
- the setting-up of the mechanism of automatic resale, use-it-or-sell-it* (UIOSI), of unused long-term capacities,
- the firmness of the nominated capacities at the German borders,
- harmonisation of the definitions of Force Majeure, the responsibility of the transmission network operators and the conditions for suspension and suppression of authorisation,
- replacement of the bank guarantee by a deposit on a professional account, credited with the amounts of each bid (except for the annual bid, only 1/6th of the amount need be provided by the participant).

The next revision of the CWE rules will take place with the setting up of the CWE market coupling* (March/April 2010).

Deliberation of the 11th of June 2009 deciding on the rules for developing the procedures to process requests for connection* to the public electricity distribution grids and the monitoring of their implementation

Having observed that the procedures to process requests for connection, until then only applied by the operators of the public distribution grids to the producers, remained inadequate to ensure a processing that is transparent, objective and non-discriminatory in terms of access to the grids, and being of the opinion that such principles should be applied to the connection of all the installations mentioned in article 18 of the law of the 10th of February 2000, the CRE decided, in its deliberation of the 11th of June 2009, in application of the 2nd paragraph of article 37 of the law of the 10th February 2000, to provide a framework for the conditions for connection of all users of the public electricity distribution grids.

Deliberation of the 11th of June 2009 concerning a communication about the conditions for approval, the content and the drafting of the procedures for processing requests for connection to the public electricity distribution grid

Pursuant to article 13 of the 3rd rider, dated the 30th of October 2008, to the convention of the 27th of November 1958 granting concession of the public electricity transmission grid to the RTE EDF Transmission SA (RTE), adopting the drafting of the Order n° 2006-1731 of the 23rd of December 2006 approving the model terms and conditions for concession of the public electricity transmission grid, the CRE approves the procedures for processing requests for connection to the public transmission grid of users and public distribution systems.

On the 11th of June 2009, after a public consultation, the CRE adopted a communication in which it gave details on the conditions for approving projects relating to the procedures for processing connection requests that are submitted to it, and defined the desired guidelines for drafting the procedures for processing requests for connection to the public transmission grid and for monitoring their implementation.

Deliberations of the 18th of June and the 9th of July 2009 on distributed load shedding

In its decision dated the 5th of December 2007, the CRE approved the transitional rules for distributed balancing which add waivers to the rules in force. The period of implementation of these transitional rules is expected to end one year after the first activation of an offer of distributed load shedding by RTE and, at the latest, by the 30th of June 2009.

As no load shedding offer has been registered on the balancing mechanism* during the period of application of the transitional rules, the working group in charge of monitoring the experiment has been able to verify the reliability of the implementation of distributed load shedding, to determine the form and duration of the load carry over effect, nor to evaluate the impact of distributed load shedding on the balancing responsible entities*.

On the 13th of May 2009, RTE suggested to the CRE that the experimental period be extended.

Noting the points of agreement between all the stakeholders, and particularly the value of the concept of distributed load shedding, the CRE approved the extension of the experiment proposed by RTE. The implementation period of these transitional rules shall end, at the latest, on the 30th of June 2010. In anticipation of the end of the experiment, feedback validating the technical and economic pertinence of the generalisation of distributed load shedding for remotely-metered and/or profiled sites should be sent to the CRE by the participants of the Distributed balancing experiment working group by the 30th of April 2010 at the latest.

If this feedback proves to be positive, the standing rules for implementing distributed load shedding shall be approved by the CRE prior to their coming into in force.

In its deliberation of the 9th of July 2009, the CRE formulated recommendations for how to generalise and develop distributed balancing, as well as on the economic valuation of distributed balancing offers.

The CRE recalls that the law of the 10th of February 2000 states, as part of the balancing mechanism, that the operator of distributed load shedding must remunerate the suppliers whose customers' supply has been interrupted for the energy injected by these suppliers and sold by the distributed load shedding operator.

The CRE requests that the players continue their discussions on the level and terms for this remuneration as well as on how to incorporate distributed load shedding into the balancing mechanism.

Furthermore, the CRE considers that setting-up a mechanism giving the players the necessary confidence in the metering data provided by the operators of distributed load shedding will encourage their development. Consequently it asks RTE to submit a proposal before the 31st of December 2009, in consultation with the players.

Moreover, the CRE wishes to enlarge the scope of the development of distributed load shedding. To this end, it invites RTE to:

- define, in consultation with the appropriate players, the terms for RTE contractualisation of the load shedding capacity of consumers connected to the public distribution grids, a capacity that is to be remunerated at a fair tariff. On the basis of the results of the experiment, this work is expected to result in contractualisation before mid-2010,
- study other methods for the valuation of distributed load shedding aside from the adjustment mechanism.

This work does not exclude the possibility of setting up, in addition, a public support measure to encourage distributed load shedding in terms of its positive externalities.

Deliberations of the Energy Regulatory Commission of the 2nd of July 2009 providing guidelines on the procedure for correcting a change of supplier where a subscription is contested

Considerations of methods for correcting an unwanted change of electricity supplier were started in 2006 by the Electricity working group (GTE) set up under the aegis of the CRE. Following a communication of the CRE of the 14th of September 2006, recommending that a solution be found to protect consumer interests, a first procedure was drafted.

Changes in the regulations with an impact on the terms for registering consumers and the results of feedback have shown the need to update the procedure.

After finding that the consultations on updating the procedure did not result in a consensus, the CRE deliberated on the 2nd of July 2009 in order to lay down the necessary framework principles. It recommends in particular that the supplier, being of the opinion that the consumer's contesting of its subscription is justifiable, does not invoice the consumer while the dispute is unresolved.

The CRE feels that it is necessary that a specific simple and effective procedure, based on principles thus defined, should be set up in the interest of the correct operation of the electricity and gas markets, for the benefit of the end consumer.

Deliberation of the Energy Regulatory Commission of the 9th of July 2009 relating to the drafting of the proposed terms and conditions for a call for tenders for ground installations generating electricity from solar energy

In application of article 8 of the law of the 10th of February 2000, relating to the modernisation and development of the public electricity service, "when production capacities do not satisfy the objectives of the pluriannual investments programme*, particularly those relating to the techniques of production and the geographical location of installations, the Minister for Energy may resort to the call for tenders procedure".

Within this framework, the CRE sent the terms and conditions for calls for tenders for ground installations generating electricity from solar energy to the Minister for Energy, on the 9th of July 2009. On the 18th of July 2009, the Minister published a call for tenders notice in the Official Journal of the European Union. The deadline for the submission of applications is the 25th of January 2010.

Deliberation of the 9th of July 2009 concerning a communication on the approval of public transmission grid access contract models

Article 14-I of the terms and conditions for the concession of the public electricity transmission grid stipulates that the public transmission grid operator "drafts grid access contract models that it submits to the Energy Regulatory Commission for approval and that it includes in the technical reference documentation", the CRE wished to define the guidelines relating to the drafting of access contract models and also the conditions for the approval of these contract models.

It therefore adopted a communication to this effect, in which it is stated that the contract models may be distinct and differentiated according to the type of user, the voltage level, or any other objective characteristic.

The CRE considers that the concept of grid access covers the access itself and also the use of the said grid but does not include the users' physical connection; so the scope of the contract submitted to the CRE for approval shall, a minima, contain all the clauses relating to the services provided in exchange of the TURPE.

The CRE will implement two approval procedures, either a procedure of so-called "revision" in the case of substantial modifications of the models, during which the CRE shall conduct a public consultation prior to studying the contract models, or a procedure of so-called "adjustment" in the case of modifications that improve the model without disrupting it; in this latter case, if it is judged necessary, the CRE will instigate a targeted consultation, appropriate for the modified clauses.

Deliberation of the 16th of July 2009 concerning proposed tariffs for using the LNG terminals

The CRE tariff proposal relates to the installations for reception, storage* and regasification of liquefied natural gas* (GNL) of the terminals at Fos-Cavaou, Fos-Tonkin and Montoir. It will be applicable for three years, as of the 1st of January 2010 for the Montoir and Fos-Tonkin terminals, and the date of commercial commissioning for the LNG terminal* at Fos-Cavaou. Its purpose is to encourage new shippers* at the French LNG terminals and the development of new regasification capacities in France.

Several major changes are proposed by the CRE in order to attain these objectives. The tariff for each LNG terminal is individualised in order to reflect its situation and its own costs and to give better visibility of its tariff trajectory. Also, the introduction of a new asset remuneration rate and investment incentives will encourage investment in the LNG terminals, thereby improving the security of French supplies.

Finally, an expense and revenue clawback account*, similar to that used for the tariffs for use of the natural gas transmission and distribution networks, has been set up in order to correct, for certain items of costs and revenue, any deviations between the forecasts used to define the tariffs and productions.

Deliberation of the 3rd of September 2009 concerning guidelines relating to the advanced metering systems developed for the natural gas retail industry

In its deliberations concerning guidelines relating to work in the consultation bodies, the Electricity working group (GTE), the Gas working group (GTG) and the Consumer working group (GTC), the CRE requested the extension to gas of the discussions previously started for electricity, as far as advanced metering systems are concerned. The results of the initial work done by the GTC, a public consultation and a round table organised by the CRE, have led to the CRE describing its guidelines for developing advanced metering systems for gas.

The CRE defined the main principles these new systems should abide by. Firstly, advanced metering is expected to improve the operation of the gas market, particularly by making the customer's real consumption available on a monthly basis and making any contractual modifications (change of supplier, bringing into or out of service) on the basis of measured (or "real"), and not estimated, indicators.

In line with the new European and national regulatory framework, the CRE also expects the advanced metering systems will facilitate the development of

new services aimed at controlling energy. This may be achieved, for example, by including in the meter a connection interface so the supplier will have consumption data on its customer more frequently, or by the occasional increase in the frequency of meter readings or the measurement pace.

Finally, the deployment of such systems is expected to help to improve the performance of the gas distribution system operators. The CRE makes it clear that such advanced metering devices should not include any functionality that may be used for competitive purposes.

On the matter of the technical characteristics of the metering systems, the CRE insists on the necessary research into interoperability between the DSO- upplier interfaces (meter/"energy unit" interface and distribution system operator IS-supplier IS interface), between the meter/distribution system operator IS interface, and also at the European level.

In terms of industrial synergies, the CRE recommends that the mutualisation of ERDF and GrDF advanced metering projects be limited to the deployment phase and only implemented under certain conditions (compatibility of deployment calendars in particular).

Finally, the CRE wishes to emphasise the necessity for GrDF to launch an experimental phase, in coordination with the working group in question, and would like to carry out a parallel technical-economic study of the Automated Meter Reading system, an advanced gas metering system. The deliberation describes the various stages envisaged by the CRE for the deployment of the advanced metering systems.

Deliberation of the 10th of September 2009 modifying the decision of the 25th of October 2007 relating to the allocation of marketable capacities at the liaison between the North and South zones of the GRTgaz network and at the interface between the GRTgaz and TIGF networks

In its decision of the 25th of October 2007, the CRE used its regulatory powers and specified the rules for allocating marketable capacities at the liaison between the North and South zones of the GRTgaz network and at the interface between the GRTgaz and TIGF networks, in force as of the 1st of January 2009.

On the 2nd of July 2009, the CRE published a deliberation giving guidelines on the organisation of access to the natural gas transmission network and the marketable capacities within the context of the development of gas interconnections with Spain. This deliberation announced, in particular, the intention of the CRE to propose to fix at €0 MWh/day and per year the capacity terms between the GRTgaz South zone and the TIGF zone, in both directions.

At the conclusion of this deliberation, it was decided that:
- the open seasons* will be launched on the basis of the transmission network* access structure in force in France since the 1st of January 2009,
- GRTgaz and TIGF, under the control of the General Directorate for Energy and Climate (DGEC) and also the CRE, are going to set up a common model for the French gas network and, before mid-2010, will carry out a study on the basis of this model in order to define the relevant flow scenarios and to evaluate the risks of congestion*.

To allow, as part of the open seasons, the long-term marketing of the capacities between the balancing zones* of the GRTgaz network and at the interface between the GRTgaz and TIGF networks, in its deliberation of the 10th of September 2009, the CRE modified its decision of the 25th of October 2007 as follows:

1. The transmission operators GRTgaz and TIGF are authorised to sell capacities at the liaison between the GRTgaz North and South zones and at the interface between the GRTgaz South zone and the TIGF zone for durations of over four years, as of the 1st of April 2013, as part of the open seasons for the "West route" and the "East route" and on the basis of the documents approved by the French and Spanish regulators, published on the ERGEG* web site.

2. Point 2. of the CRE decision of the 25th of October 2007 is amended and replaced by:
"2. A part of the capacities is reserved for annual or seasonal subscriptions. This corresponds to 20% of the marketable capacities for the liaison

between the North zone and the South zone of GRTgaz, in both directions, and for the interface between the GRTgaz South zone and the TIGF zone, in both directions."

3. The capacities unsold in the "West route" and the "East route" open seasons will be marketed as "walk-in business" for durations of two to four years.

Deliberation of the 8th of October 2009 on the development of the balancing rules on the GRTgaz transmission network

Since 2007, the balancing rules for the GRTgaz transmission network have changed to a market mechanism, by means of a specific GRTgaz Balancing platform managed by Powernext. On this platform, a daily balancing tariff is defined according to the transactions made and is used to invoice a part of the imbalances of each shipper.

In order to merge the GRTgaz Balancing platform with Powernext Gas, discussions have been held to define the terms for the intervention of GRTgaz on Powernext Gas Spot and to determine the most appropriate reference price for invoicing the imbalances of the shippers.

On the 6th of July 2009, GRTgaz submitted to the CRE a proposal for changing the balancing rules on the transmission network, applicable as of the 1st of December 2009. In this proposal, GRTgaz proposed to intervene on Powernext Gas Spot as of the 1st of December 2009 to cover part of the gas it requires for balancing.

The terms for the GRTgaz intervention on Powernext Gas Spot are in line with those already set up on GRTgaz Balancing, subject to some necessary adjustments. Thus, the principle of a daily balancing price, derived from the transactions made by GRTgaz on the market, is maintained. However, if GRTgaz does not conclude any transactions during a session, the daily balancing price will now be calculated on the basis of the Powernext end-of-day reference price.

Moreover, in order to benefit from the highest level of liquidity, GRTgaz proposed to modify its intervention slots (from 3.45pm to 4pm for a delivery during the day and 4.30pm to 4.45pm for a delivery the following day or Mondays and weekends).

Finally, GRTgaz will intervene without notice, at the most four times during two daytime sessions, during which it will automatically select the best priced offers that meet its requirements. Restrictions have been introduced on the price of these offers in order to prevent the risk of disturbing the activity of Powernext Gas Spot.

Bearing in mind that the intervention of GRTgaz on Powernext Gas Spot will increase the number of considerations it receives as well as its liquidity, and that the reliability of the balancing price used for invoicing the imbalances of the shippers will therefore be improved, the CRE has approved the balancing rules on the GRTgaz transmission network.

In accordance with the wishes of the players that have been consulted, the GRTgaz Balancing platform will nevertheless be kept until there is feedback in the first half of 2010 on the GRTgaz terms of intervention.

Deliberation of the 15th of October 2009 deciding on the allocation rules for the liaison capacities from the North balancing zone to the South balancing zone of GRTgaz

Since the 1st of January 2009, access to the French natural gas transmission networks has been organised into three balancing zones operated by two transmission system operators, TIGF in the south-west and GRTgaz over the rest of the French territory.

In spite of the improvements made with this new structure, access to the south of France remains difficult for the shippers that do not have supplies from the Fos LNG terminals. Indeed, the main part of the capacities for accessing the South balancing zone of GRTgaz, as well as the TIGF balancing zone, relies today, with the exception of the supply of liquid natural gas (LNG), on the North to South link of the GRTgaz balancing zones. The technical transmission capacity on this link breaks down into 230 GWh/day of firm capacity and 220 GWh/day of interruptible capacity*; 20% of these capacities are marketed on an annual basis.

The work of the Concertation Gaz group for Allocation of the capacities has dealt with the changes to the rules for allocating capacities on the North to South link of the GRTgaz zones. By a small majority the principle of allocation at the prorata, completed by the "guarantee allocation" option, was agreed. The immediate application of the principle of allocation known as "for needs" was not adopted.

Consequently, on the 24th of September, GRTgaz proposed the implementation of this allocation rule to the CRE.

The prorata allocation rule, improved by the "guarantee allocation" option, has been the subject of a CRE consultation by e-mail between the 28th of September and the 5th of October 2009.

Based on the results of this consultation, the observation of a rate of physical use of the North-South link capacities of 95.8% over the period from the 1st of January 2009 to the 31st of August 2009 and on the positive development of market signals, the CRE has approved the GRTgaz proposal during its deliberation of the 15th of October 2009.

This defines the rules for allocation of firm and interruptible annual capacities over the period from the 1st of April 2010 to the 31st of March 2011 on the North to South link of the GRTgaz balancing zones.

The capacities offered on the market over this period of one year are as follows:
- 46 GWh/day of firm capacity of North GRTgaz to South GRTgaz,
- 44 GWh/day of interruptible capacity of North GRTgaz to South GRTgaz.

The consultation will be continued in order to define the allocation rules for the sales of pluriannual (2, 3 and 4 years) and annual capacities that will take place next year.

Deliberations of the 29th of October 2009 concerning guidelines for the work of the GTC, GTE and GTG consultative bodies relating to the operation of the retail markets for electricity and gas

The Consumer working group (GTC), the Electricity working group (GTE) and the Gas working group (GTG) were created in 2005 by the CRE in order to define the practical operating methods of the electricity and gas retail markets. They bring together all of the players concerned: consumer representatives, suppliers, network operators and public authorities.

Since their creation, these groups, placed under the auspices of the CRE, have defined the operating procedures shared by all of the professionals in the sector. More than two years after the total opening up of the markets to competition, the majority of the procedures set up (change of supplier, commissioning, termination, etc.) have proved their effectiveness, as the developments which have occurred owe more to an approach consisting of continuous improvement, such as the gradual reduction in the delay in the change of supplier to ten days, than to review of the initial rules.

An exception to this remains the procedure of "correction of change of supplier in the event of the contesting of a subscription". Since the consultations could not produce a consensus, the CRE deliberated on the 2nd of July with the aim of specifying the principles that should guide the development of this procedure, necessary for the correct operation of the markets. Indeed, although the proportions are still slight as regards the number of residential sites which have taken up this offer* (less than 1%), the CRE has found that 50% of the complaints received in 2008 by Énergie-Info, a set-up shared with the national energy ombudsman, relate to matters of subscription and unsolicited cancellations.

The past year has also been characterized by the build up of the work relating to the development of metering systems, for both electricity and gas, and the assessment of their impact on existing systems (procedures and information systems).

For electricity, apart from the overall monitoring of the ERDF Linky project and the preparation of the experimental phase, work has concerned the development conditions of advanced metering systems in the LDCs' service zones and the characteristics of these systems for major customers.

For gas, the consultation phase has enabled the players to understand the specifics and the constraints of the gas market, and to define their expectations of advanced metering systems developed for the mass

market. Possible synergies between gas and electricity metering systems have also been analysed. These elements have served as a basis for the CRE deliberation of the 3rd of September 2009.

In its deliberation of the 29th of October 2009, the CRE reported on the work requested in its deliberation of the 17th of July 2008 together with other work carried out since, exposed the decisions it took and described the guidelines for the work and organisation of consultative groups starting from the 4th quarter of 2009. Thus the year 2010 will see the creation of a working group for the management of energy in a way which will enable, on the one hand, further progress in the work carried out on advanced metering systems, and on the other, the integration of the element of energy efficiency in the consultation process.

Finally, the complete list of provisions applicable to open markets has been brought up to date in order to take into account the development of procedures worked out within the framework of consultation authorities under the auspices of the CRE. The procedures have been commonly accepted and applied, by the users as well as the network operators, and thus constitute uses which are not devoid of normative value, as the CRE's Standing Committee for Dispute Settlement and Sanctions (CoRDiS) stated in its decision of the 26th of September 2007.

On the 17th of December 2009, the Energy Regulatory Commission published its report on the operation of the French wholesale electricity and natural gas markets

On the electricity market:
The report takes into account the audits conducted by the CRE regarding methods for the valuation of the EDF nuclear and hydro-electric facilities.

The conclusions of this work, carried out with external consultants, do not take issue with the valuation principles used by EDF, which consist in minimizing generation costs. The audits have also concerned the intervention methods of EDF Trading in the markets, in particular daily optimisation tools. EDF Trading offers are globally coherent with marginal costs. An analysis of marginal costs and spot prices on the EPEX market has been carried out: on the basis of the audit results, the CRE has found that the margin between the spot price* and costs is not a reflection of the exercise of market power. This difference between the spot price and costs will be the subject of regular and specific monitoring by the CRE.

The analysis of the use of different generation methods shows that the estimated duration of marginality of the nuclear method is inferior in 2008 to that observed in 2007, while the boundaries are henceforth more often marginal.

At the European level, price comparisons between France and neighbouring markets reflect, on one hand, the structural differences of the production facilities, and on the other, the heightened sensitivity of French consumption to temperature variations. A drop of one degree in temperature leads to an increase in demand of 2,100 MW because of the substantial resort to electric heating.

On the gas market:
Developments in the markets since 2008 have occurred in a context marked by several key events. These are linked, on the one hand, to the international environment – with notably the sharp increase in the price of oil in summer 2008, the economic recession and the appearance of gas surpluses in relation to world demand – and, on the other hand, to specific developments in the French market, such as the fusion into one single zone on the 1st of January 2009 of three previous transmission zones in the north of France (North-H, East and West).

This situation has allowed liquidity to develop in the North zone market. Arbitration opportunities between long-term import contracts indexed to oil products and purchases in wholesale markets have also increased. Current levels of the gas market prices in France reflect the situation on the international gas market and are clearly below the levels of the price of oil indexed long-term contracts. Because of this, big consumers who play competitors against each other for their gas purchases have benefited, since the beginning of 2009, from very favourable price conditions.

2. European and international calendar for 2009

2.1. Calendar for adoption of the 3rd package

19 September 2007	Presentation of 5 texts of 3rd package by the European Commission
28 February 2008	Presentation of "3rd way" (ITO model) during the Energy Council
6 May 2008	Vote on 5 texts amended by the ITRE Commission of the European Parliament
18 June 2008	Vote in 1st reading by the European Parliament in plenary session (Electricity directive, Electricity regulations, ACER regulations)
9 July 2008	Vote in 1st reading by the European Parliament in plenary session (Gas directive, Gas regulations)
10 October 2008	Agreement of Energy Council in 2nd reading
22 April 2009	Adoption of 3rd package in 2nd reading of the European Parliament
25 June 2009	Definitive adoption of all the texts by the Council
14 August 2009	Publication in the Official Journal of the European Union
3 September 2009	Coming into effect of 3rd package
3 March 2011	Schedule for the transposition of directives 2009/72/EC and 2009/73/EC: arrangements applicable 18 months after coming into force, with the exception of certain arrangements of article 9 relating to the separation of networks and transmission system operators applicable as of the 3rd of March 2012 and with the exception of the article relative to the certification of third-party countries which will apply from 3rd March 2013
	Application of regulations (EC) N° 713/2009, N° 714/2009 and N° 715/2009: in order to retain the homogeneous character of the legislative package, their application will take place at the same time as the directives

2.2. Calendar of the European Union institutions

- **Calendar of the Czech Presidency (1st half of 2009)**
  - TTE Councils [57]-Energy: 12 January (extraordinary), 19 February, 12 June
  - European Councils: 19-20 March and 18-19 June

- **Calendar of the Swedish Presidency (2nd half of 2009)**
  - TTE Councils - Energy: 23-24 July (extraordinary), 7 December
  - European Counsels: 29-30 October and 10-11 December

2.3. European Forums

- **Florence Forum** on electricity, 4-5 June and 10-11 December 2009
- **Madrid Forum** on gas, 28-29 May 2009
- **Citizens' Energy Forum in London,** 29-30 September 2009
- **Bucharest Forum** on renewable energies and energy efficiency, 9-10 June 2009

2.4. Work linked to the implementation of the 3rd package

- **Participation in the working group (APT) on the establishment of the ACER and the transition period**
  - Supervision and validation in January 2009 of the public consultation launched at the end of 2008 relating to the intermediary period, drawing up of the network codes, ACER/ TSO relations etc.
  - Drafting of the proposed internal rules for the ACER
  - Proposals related to the establishment of a process of elaboration of framework-guidelines and network codes
  - 1 to 2 meetings per month

- **Contribution to the work of Energy package (ENP WG) high level group responsible for the monitoring of the 3rd package**
  - Work on the future statutes of the ACER
  - Study of the provisions relating to the implementation of the separation of network activities
  - One meeting per month

(57) TTE: Transport, telecommunications and energy.

2.5. Other activities within the framework of the CEER/ERGEG

- **Participation in the elaboration of the CEER/ERGEG 2010 work programme**
  Meetings in July, August, and September 2009

- **Monitoring of work related to the Energy Community**
  Meetings of the ENC Working Group

- **DG TREN annual report**
  - Sending of the report related to the state of openness of the electricity and gas markets in France to the European Commission at the end of July 2009 (community obligation)
  - Preparation of the "evaluation" of the ERGEG within the framework of the URB working group: synthesis and evaluation of the various national reports on the opening of the markets

2.6. Activities of the International Strategy Group of the CEER (ISG)

- **Meetings of the international strategy group, chaired by the CRE:**
  - 21 January 2009 (Brussels)
  - 18 March 2009 (Brussels)
  - 16 June 2009 (Florence)
  - 2 September 2009 (Paris)
  - 1 December 2009 (Brussels)

- **ISG (CEER) meetings– third world countries**
  - Organisation of an CEER round table-African Forum for the regulation of public services on the theme "The creation of the interior energy market in Europe: what lessons for Africa?", 21st April 2009 (Abidjan)
  - Participation in the 6th annual conference of the African Forum for the regulation of public services related to the theme "Towards regulation in favour of the poor: attaining the objectives of the millennium for development by infrastructure services in Africa", 22-23rd April 2009 (Abidjan)
  - Meeting with the Indian electricity regulators (CERC – Central Electricity Regulatory Commission) and gas (PNGRB – Petroleum and Natural Gas Regulatory Board) industry 18-19th May 2009 (New Delhi)
  - Participation in the meeting between CEER and the Federal Tariff Service of the Federation of Russia (Federal Tariff Service), 23rd May 2009 (Rome)
  - Meeting between the CEER and the Authority of regional regulation of the electricity sector of the Economic Community of West African States (ARREC), 4th September 2009 (Paris)

- **Other international events:**
  - Participation in the round table of energy regulators of the countries of the enlarged G8, 23rd May 2009 (Rome)
  - Participation in the World Forum on Energy Regulation (WFER IV), 18th to 21st October 2009 (Athens)

2.7. Work of the Mediterranean working group for electricity and natural gas regulation (MEDREG)

- **Meetings of the workgroup on institutional questions, chaired by the CRE,** 16th March (Zagreb) and 12th October (Paris):
  - Training session given by the Florence School of Regulation on the general framework for regulation in the energy sector and its development
  - Preparing and setting-up a comparative study on the protection of consumers in the Mediterranean region by means of a survey by questionnaire

- **Meetings of the MEDREG General Assembly** 9th June (Cairo) and 13th November (Nicosia)

2.8. Progress in the North-West zone: conference of the National Assembly

On 9th June 2009 the CRE hosted the 5th Gas Conference of the North-Western Regional Initiative (58) Stakeholders Group Meeting in the premises of the National Assembly.

Organised twice a year, this meeting brings together the stakeholders from the countries of the North-Western Region (regulators, market players, network operators, governments and the European Commission) with a view to evaluating the situation regarding integration of the markets. The issues are numerous: as the main consumption area of the European gas market, it is made up of a large number of interconnected gas systems and takes in the main European hubs.

During this day's work, the region's three priorities were debated: transparency, investments and improvement of access to capacity, and a session was added to analyse elements that are particular to the region, notably in the event of a shortage of supply.

(58) Belgium, Denmark, France (north zone), Germany, Great Britain, Ireland, the Netherlands, Northern Ireland, Sweden and Norway (observer).

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4. Glossary

Account unbundling: obligation requiring integrated companies to keep separate balance sheets and income statements for production (electricity), transmission, distribution (electricity and gas), storage (gas) and other activities. These accounts, as well as the principles governing their preparation (allocation rules, account scope, financial relationship between activities) appear in the attachments to the operators' annual accounts.

Alternative supplier: suppliers that are not incumbent suppliers are considered as alternative.

Avoided costs: when an operator is obliged to buy a quantity of electricity as part of feed-in obligations imposed by public authorities, this quantity takes the place of energy which it would have been obliged to procure itself (by generating or purchasing it). The resulting savings constitute avoided costs.

Balancing mechanism: a mechanism used by transmission system operators (RTE) so that they have reserves of power available that can be mobilised at short notice as soon as an imbalance between supply and demand becomes apparent. Those taking part in this mechanism are generators who offer their ability to modulate production, consumers that may surrender a part of their consumption and traders importing and exporting electricity.

Balancing responsible entity: a legal entity that is committed to RTE, through a balancing contract, to settling the costs of imbalances observed after the fact between, within the defined area, electricity injected (by generators) and electricity consumed (by consumers). For negative imbalances RTE shall be financially compensated by the RE, and for positive imbalances it is the RE that is financially compensated by RTE.

Balancing zone: geographical area on the main transmission network where the shipper must maintain the daily balance between gas supply and consumption.

Biogas or bio-methane: gas from the fermentation of animal and vegetable waste – phenomenon called "methanisation" It is mainly made up of methane (between 50 and 70%) and carbon dioxide. It may be used to generate electricity.

Biomass: biodegradable fraction of products, waste and residues generated in agriculture, including vegetable and animal matter, from land and sea, forestry and associated industries, as well as the biodegradable fraction of industrial and household waste.

Buy-in obligation: in order to promote the development of electricity production from renewable energies, the law of the 10th of February 2000 obliges EDF and local distribution companies (LDC) to purchase, under imposed conditions, the electricity produced by cogeneration plants, by energy from domestic waste plants or those supplying a heating network and by installations using renewable energy sources.

Capacity netting: carried out by grid operators, this action consists of taking into account firm nominations for commercial flows in each direction in order to free up additional capacity.

CEER (Council of European Energy Regulators): association created in 2000 by national energy regulators from Member States of the European Union and the European Economic Area. CEER's organisational structure includes a general assembly (the sole decision-making body), an executive board, working groups specialised in a range of fields (including electricity and gas, consumer rights, international strategy, etc.) and a secretariat located in Brussels. A work programme is published every year. In accordance with the association's statutes, decisions are taken by consensus or, failing that, by qualified majority vote.

Cogeneration: simultaneous production of thermal energy and electricity.

Combined cycle power plant: thermal power plant, usually running on gas-fired turbines, where electricity is generated in two consecutive cycles: first, through gas combustion in the turbines; and second, using the energy produced in the gas combustion process to heat boilers that feed steam generators. This process achieves high thermal efficiency (55 to 60%, compared with just 33 to 35% for conventional thermal power plants).

Commercially sensitive information: information which, if disclosed to non-authorised persons, is likely to impede free and fair competition between natural gas and electricity suppliers. In terms of natural gas, information that must remain confidential is covered by Article 9 of Law no. 2003-8 of the 3rd of January 2003 and Decree no. 2004-183 of the 18th of February 2004. In terms of electricity, this information is covered by Article 20 of the Law of the 10th of February 2000 and Decree no. 2001-630 of the 16th of July 2001 modified by Decree no. 2007-1674 of the 27th of November 2007. It is the network operators' responsibility to make available to all suppliers all the information necessary for an efficient access to the network, so that they may exercise their activity.

Compression station: industrial facility where gas is compressed in preparation for transport via pipelines.

Congestion: state of saturation of a power line or gas pipe which prevents operators from transmitting or distributing all the quantities injected or withdrawn, given the features and performance characteristics of the grid or network.

Connection: action allowing a user to be physically connected to a network.

Connection facility (electricity): any element of an electricity grid involved in the connection of a user's private installation to the public electricity transmission or distribution grid.

Connection facility (gas): pipelines and installations connecting a final customer or distribution network to a gas transmission or distribution network. These connection works are composed of one or several of the following elements: connection, delivery stations, distribution network extension.

Conversion: the transmission network operated by GRTgaz has two different types of zone: the H zone supplied with gas that has a high calorific value (H gas) and the L zone, supplied with gas having a low calorific value (L gas). The two gases are not interchangeable. GRTgaz offers a conversion service allowing shippers to exchange resources they own in the H zone against L gas.

Conversion point: virtual points assigned to balancing zones North H and North B, where the conversion between these two zones takes place.

Cross-subsidies: the use of resources from one activity to benefit another activity under conditions that are not determined by market forces between two separate companies.

Day-ahead market (spot market): market on which exchange, purchase and sales transactions are carried out for amounts of electricity or volumes of gas deliverable the next (working) day (purchase/sale of quantities of electricity or volumes of gas).

Delivery point: point on a transmission or distribution network where a transmission or distribution system operator makes gas available to a shipper, final customer or other system operator.

Delivery station (electricity): formed by the installations (buildings, equipment and electrical apparatus) constituting the interface between a private installation and the public electricity transmission or distribution network.

Delivery station (gas): facility located downstream of a transmission or distribution network, providing one or more of the following functions: pressure relief, regulation and metering. A delivery station is used to deliver gas to a distribution network or final customer.

Electricity supply: in electricity demand, a distinction is made between four types of consumer:
- a "baseload" (or "uniform") electricity supply, which is generated or consumed permanently throughout the year,
- "semi-baseload" supply, where generation and consumption are concentrated in the winter season,
- "peakload" supply, which corresponds to periods during the year when production or consumption is high,
- "spot" supply, a complement to "uniform" supply.

Electricity transmission and distribution grid: system designed for the transmission of electricity between power plants and consumption sites. It consists of power lines that provide connections at given voltage levels and substations consisting of voltage transformers, connection and cut-off devices, measuring instruments, command and control equipment and equipment to compensate reactive energy. There are three grid hierarchies:
- bulk transmission and interconnection grid which routes large amounts of energy at 400 kV or 225 kV over long distances, with low loss,
- regional distribution grids that distribute energy at a regional level, supplying the public distribution grid and large industrial customers with 225 kV, 90 kV and 63 kV energy,
- distribution grids at 20 kV and 400 V supplying final customers with medium voltage (SME-SMI), or low voltage (household customers, tertiary sector and small industrial facilities).

Eligibility: freedom, for an end customer, to choose its supplier of electricity or gas. The eligibility framework is laid down by article 22 of the law no. 2000-108 of the 10th of February 2000 relating to the modernisation and development of the public electricity service, completed by the Order no. 2004-597 of the 23rd of June 2004. Eligible customers are authorised to ask their suppliers to compete and to freely

negotiate prices and procedures for supply. Since the 1st of July 2007, all customers are eligible.

Entry point: point on a transmission or distribution network where a transmission or distribution shipper makes gas available to a transmission or distribution system operator under the terms of a transmission or distribution transportation contract.

Entry-exit tariffs: tariff system applied on gas networks in many European countries (Great Britain, the Netherlands, Italy and France). It consists of splitting the capacity subscriptions at the entry and exit points on the main network and invoicing the two transmission components (entry and exit) separately.

ENTSO (European Network of Transmission System Operators): this is a European network of transmission system operators for electricity (ENTSO-E) and gas (ENTSO-G). Transmission system operators cooperate at the level of the European Union, via the ENTSO, to promote the creation and the operation of the internal electricity and natural gas markets, and cross-border exchanges, and to provide optimum management, coordinated exploitation and a solid technical development of the electricity and natural gas transmission systems. Within this framework, the ENTSOs create European network codes, on the basis of the framework-guidelines laid down by the Agency for the Cooperation of Energy Regulators (ACER) and working closely with the latter.

ERGEG (European Regulators Group for Electricity and Gas): created by the European Commission as part of implementing the 2003 directives, ERGEG's role is to advise and assist the Commission in consolidating the internal energy market by contributing to full implementation of European directives and regulations and preparing future legislation in the areas of electricity and gas. ERGEG is composed of the European Commission and independent regulators from the 27 European Union Member States. Member States of the European Economic Area and countries that have applied for membership to the Union are invited as observers. To achieve its objectives, which are also part of a public work programme, ERGEG has a structure similar to that of CEER. In addition, ERGEG widely consults energy sector players on issues where its opinion is required. This opinion also involves the European Commission, which can then give it legally binding status through the Community comitology process.

Expense and revenue clawback account: a fiduciary account not recorded in regular accounts, provisioned with any surplus earnings and, if necessary, any loss of earnings for a public system operator. Depending on whether the balance of this account is positive or negative, it is reconciled by decreases or increases in the costs to be covered by public electricity grid tariffs in the following years.

Florence Forum (electricity) and Madrid Forum (gas): periodic meetings, created by the European Commission, bringing together for electricity and gas respectively, government representatives, regulators, TSOs, associations of producers, users and consumers under the auspices of the European Commission.

Forward product: forward exchange contract signed to deliver a given quantity at a given price according to a defined schedule.

Future product: forward contract negotiated on an exchange (organised market). The proposed terms vary according to the organised markets (weekly, monthly, quarterly, every six months, annually). The term Y+1 corresponds to the calendar year following the current year.

Gas day: period of 23, 24 or 25 consecutive hours, starting at 6:00 am on a given day and ending at 6:00 am the following day.

Gas exchange point (PEG): virtual points on a French gas transmission network where shippers can exchange gas. There is a PEG in each balancing zone in the French network. Each PEG is a virtual hub.

Gas release: obligation for a supplier to release part of its gas resources to other suppliers for a given period. The purpose of this operation is usually to stimulate competition by offering alternative suppliers the opportunity to secure supply without having to negotiate directly with the incumbent supplier.

Gas storage facility: facilities for the building up of gas reserves stored either as gas (in underground storage facilities) or LNG (in above-ground tanks).

Gas year (storage): 12-month period between 1 April and 31 March.

Gate closure:
- with referral to generation scheduling and balancing mechanisms: deadline for submitting, changing, or withdrawing a balancing bid, or for re-submitting the generation schedule and/or technical requirements and limitations of a group,
- with regards to interconnections: deadline to submit either interconnection (allocation) capacity requests or nominations of acquired capacity.

Hub: distinction is to be made between a virtual hub and a physical hub.
- Virtual hub: an electrical or gas exchange point that cannot be precisely located geographically (e.g. the NBP in the United Kingdom, or the electricity transmission network or the gas exchanges points (PEGs) in France. The exchange is made between the entry and exit of the corresponding zone's transmission network, without any further details).
- Physical hub: electricity or gas exchange point situated in a specific geographical location (example: Zeebrugge in Belgium where the exchange takes place on a physical platform).

Incumbent supplier: for electricity, incumbent suppliers are EDF, local distribution companies (LDCs) and their subsidiaries; for gas, the incumbents are Gaz de France, Tegaz, LDCs and their subsidiaries. An incumbent supplier is not considered as an alternative supplier outside its incumbent service area.

Integrated company: vertically or horizontally integrated company. A horizontally integrated company conducts business outside the electricity sector and also performs at least one of the following: generation, sale, transmission and/or distribution of electricity. A vertically integrated company's business includes at least two of these services in the electricity sector.

Integrated tariff or regulated tariff for the sale of electricity: also called the historic tariff, this regulated tariff is fixed by an Order from the Ministers for the Economy and Energy, after consultation with the CRE. There are three types of integrated tariff contract:
- blue (for contract demand not greater than 36 kVA),
- yellow (for contract demand greater than 36 kVA),
- green (for a subscribed power greater than 250 kVA).

The electricity tariff translates the costs of generation and of making this energy available to the consumers. For each contract, the tariff includes a subscription and a price of the energy effectively consumed: The annual total for the subscription and the price of the energy depend on the power that the subscriber is entitled to, the supply and the mode of use of the said power over the course of the year.

Interconnected system: network or grid made up of several electricity or gas transmission and distribution networks connected together by one or more interconnections.

Interconnection: equipment used to connect two electrical grids, or pipes connecting two gas transmission networks.

Intermittent generation: generation which is irregular.

Interruptible capacity: capacity product that the transmission operator is not able to guarantee will be used at any given moment during the duration of the subscription. As a consequence of which, under certain conditions, the transmission operator may refuse nomination requests made by the shipper holding this interruptible capacity product.

Intraday market: market for contracts concluded on day D for delivery the same day or the following day, if the transaction is made after the main activity period of the day-ahead market.

Line pack: storage of gas in the gas transmission and distribution networks using compression.

Liquefied natural gas (LNG): natural gas transported in liquid state by cooling to -160°C, mainly so that it can be carried in LNG ships.

LNG terminal: facility used to receive and store liquefied natural gas (LNG) and ship it to the main transmission network after regasification.

Load-balancing: term referring to the difference between a customer's actual gas consumption pattern and the pattern corresponding to a regular withdrawal over the year of this customer's average daily consumption. Consumption variations (daily, weekly or seasonal) are generally covered by underground storage facilities, to which the customers and their suppliers can have access, either directly (in countries where regulated or negotiated third-party access to storage systems is allowed) or in the form of a load-balancing service (as is the case in France).

Load-balancing service: service offered in addition to the transmission or transportation contract, designed to improve management of fluctuations in natural gas use by customers on a daily, monthly, or seasonal basis. This service is pro-

vided at a virtual point, called a load-balancing point, within each of the balancing zones on the transmission network.

Local distribution company (LDC): private company or public corporation that distributes and/or supplies electricity and/or gas within a given geographical area, not served by ERDF or GrDF.

Losses on the networks: losses are generally the energy dissipated by the Joule effect during transmission and distribution, to which is added the energy consumed but not metered (losses that are said to be non-technical: fraud, metering errors) on the 20 kV and 400 V networks. Technical losses are associated essentially with consumption, generation planning and cross-border exchanges. They vary according to the season and the time of day. On average, the rate of loss is 6% of injections, which represents around 33 TWh per year.

Main network exit point: point on a natural gas transmission network used as an interface between a main transmission network and a regional transmission network.

Main and regional gas transmission network and gas distribution network:
- the main transmission network is a set of large-diameter, high-pressure pipes linking interconnection points with neighbouring networks, underground storage facilities and LNG terminals, and to which the regional transmission networks, distribution networks and high-consumption industrial consumers are connected,
- the regional transmission network is part of the transmission network used to transport natural gas to the distribution networks and high-consumption final customers,
- the distribution network is a set of medium- and low-pressure transmission pipes transporting gas to final customers and to other distribution networks, as necessary.

Market contracts: offer for which prices are fixed freely by the suppliers, for a contract.

Market coupling (explicit auctions, implicit auctions): coupling several markets implies grouping their supply and demand curves and processing them all together according to their economic relevance, i.e. matching the highest purchasing orders with the lowest sales orders, independently of the market where they were placed, but taking into account the daily interconnection capacities. In other words, within the limits of available interconnection capacity, the counterpart of a transaction on an electricity exchange may originate from a foreign exchange, without participants being obliged to explicitly buy the corresponding capacity at the border in question. It is a type of implicit auction, as opposed to explicit auctions where participants trading energy across borders must buy the corresponding interconnection capacity.

Metering: measurement of the production or consumption of gas or electricity.

Metering or estimation point: point on a transmission or distribution system where a quantity of energy is determined using meters or estimates.

Natural monopoly: a sector of economic activity characterised by strictly increasing returns, i.e. the cost of the last unit produced is lower than all the previous ones. In these conditions the average production costs are strictly decreasing, i.e. the average cost decreases with the volume produced. As a result, a single operator inevitably outperforms multiple operators, as long as measures are taken to avoid abusive use of this monopoly situation. The sectors concerned are generally those in which the investment costs (fixed costs) are so high that there is no justification in multiplying costs simply to ensure a competitive market. Examples of natural monopolies generally cited are infrastructure networks: railway networks, road and motorway networks, water and gas distribution networks, electricity distribution grids.

Nomination of capacities: at the stage of nomination, a holder of capacities notifies the network operators of the volume that it wishes to export or import, without exceeding the capacities held.

Non-interconnected zones: parts of France that are not connected (by power lines) to the mainland electricity grid (Corsica, Martinique, Guadeloupe, Reunion, French Guiana, Saint-Pierre and Miquelon and the islands of Molène and Ouessant).

Non nationalised distributors: see local distribution company (LDC).

Off-peak product: on the electricity wholesale market, an "off-peak" contract entails delivering constant power during certain time slots, generally at times when consumption is at its lowest. Thus, in France, the "off-peak" period refers to time slots between 8:00 pm and 8:00 am from Monday to Friday, plus the weekend.

- Virtual hub: an electrical or gas exchange point that cannot be precisely localised geographically (e.g. the NBP in the United Kingdom, or the electricity transmission network or the gas exchanges points (PEG) in France. The exchange is made between the entry and exit of the corresponding zone's transmission network, without any greater precision).
- Physical hub: electricity or gas exchange point situated in a specific geographical location (example: Zeebrugge in Belgium where the exchange takes places on a physical platform).

Open season: procedure aiming to dimension new infrastructure according to market needs and to allocate corresponding capacities in a non-discriminatory manner.

Open subscription period (OSP): reservation time period during which all requests issued by shippers are considered as having been received at the same time. At the end of this period, all requests are processed, if necessary by allocating available capacity on a pro rata basis.

OTC market: Over the Counter market on which interaction is bi-lateral. It may either be mediated, when the purchase and sales orders are made via brokers, thus allowing supply to meet the demand, or pure, if the transactions are made directly between operators.

Peakload product: on the electricity wholesale market, a "peak" contract entails delivering constant power during certain time slots, generally at times when consumption is at its highest. In France, the "peak" period refers to time slots between 8:00 pm and 8:00 am from Monday to Friday. The other standard delivery profiles are "baseload", "off-peak" and the blocks.

Peak watt: unit of maximum power of a photovoltaic installation.

Pluriannual investment programme: under French law, objectives set by the Minister for Energy for the distribution of electricity power-generating capacity according to primary energy source and, if necessary, according to the generating technology and geographical area.

Pool: mandatory electricity market where generators are obliged to offer all their means of generation.

Postage stamp tariff: pricing principle which provides access to an entire service area, in exchange for the payment of a single access fee, regardless of the distance covered to transmit the electricity. This tariff is divided into two parts:
- an injection stamp: payment by the generator to deliver energy to a grid connection point,
- a withdrawal stamp: payment by the consumer to be supplied at a grid connection point.

Pressure: depending on the type of network, three pressure levels are normally used in the gas industry:
- for major international transmission, the pressure level is between 60 and 100 bar,
- for the main national and regional French networks, between 40 and 80 bar,
- for distribution networks, there are two pressure levels: medium pressure (400 mbar to 4 bar) and low pressure, supplied directly to household customers (no greater than 50 mbar).

Price cap: tariff regulation mechanism by which the regulation authority sets the rate of price level change several years in advance. This mechanism is generally considered to encourage improvements in productivity since the companies with regulated tariffs can benefit from all or part of the savings they make during the period for which the tariffs have been set.

Producer generator: natural person or legal entity that produces natural gas and/or electricity.

Profiling: refers to the method used by the distribution system operators to estimate the consumption or production, in half hours of electricity or days of gas, of sites that are not equipped with index meters. This method is based on the determination, for categories of customers, of the generally known form of their consumption (profiles).

Quality of electricity: quality level of the electricity delivered to the network, evaluated in terms of the frequency and the duration of long and short outages as well as the quality of the voltage wave.

Quality of gas: all physical characteristics (pressure, temperature, gross and net calorific values, Wobbe index) and chemical characteristics (amount of methane, propanes, butanes, nitrogen and other inert gases) of a distributed natural gas.

Remote meter reading: taking a reading from a remote location to determine the amount of electricity injected into and withdrawn from the grid. This remote meter reading technique, often associated with meters recording load curves and not only indexes, is essentially used on sites with heavy consumption or for generator sites.

Renewable energy: energy originating from sources that nature renews continually (water, wind, sun, organic matter, geothermal energy).

Reversibility: the possibility for an eligible customer who has signed a market-based contract to return to a contract based on regulated tariffs, under specific conditions.

Spot: short term market, including operations for short deadline delivery.

Supplier: a legal entity, holding a licence for the gas sector, or registered with the public authorities for the electricity sector, supplying at least one final customer with electricity or gas, using either energy it produces itself or energy that it has purchased.

Supply contract: contract for the sale of electricity or natural gas by a supplier to a final customer or trader.

System services: services rendered by the balancing mechanisms made available to RTE by the electricity producers to assist in the maintenance of frequency and voltage on the electricity grids.

Tariffs for use of the public electricity transmission and distribution grids (TURPE): these tariffs are regulated (determined by the government according to proposals from the CRE) and are applied identically for all customers. This item of the invoice is therefore not negotiable with the supplier, and its amount must be given in the invoice. Even if the supplier can present a complete view of its price formulas ("supply" part + "grid access" part) the cost of use of the grid is invoiced to the supplier by the operator of the grid to which the customer is connected.

Third Party Access: recognised right for any user (eligible customer, distributor, producer) to access a transmission (ATRT) or distribution (ATRD) network in return for payment of access fees.

In the case of a regulated access, the tariffs for use of the system are set by the regulator. The access conditions are transparent and non-discriminatory as regards users. In the case of negotiated access, the conditions for system access are negotiated between the system operator and the market players (eligible customers, generators, etc.), on a case by case basis.

Transitional regulated tariff for balancing markets (TaRTAM): also called a return tariff, this is a regulated tariff available, until the 30th of June 2009, to customers who have exercised their eligibility and have made an application before the 1st of July 2007.

Transmission/distribution interface point (PITD): point at which the gas transported by a transmission system operator is taken over by the distribution system operator.

Transmission shipper or distribution shipper: signatory of a transmission contract, or a distribution contract, with a transmission or distribution system operator. A transmission or distribution shipper may be an eligible final customer, a supplier or their proxy.

Transmission system operator (TSO) or distribution system operator (DSO): entity responsible for the design, construction, operation, maintenance and development of a public transmission or distribution network, performing contracts relative to third party access to these networks.

Transportation & Transmission Contract (Transmission Contract) / Transportation & Distribution Contract (Distribution contract): contract signed between a transmission or distribution system operator and a transmission or distribution shipper for the purpose of transporting quantities of energy between one or more entry points and one or more delivery points.

Underground storage facility: installations using geological formations (aquifers or salt domes) to store gaseous hydrocarbons.

Union for the Coordination of Transmission of Electricity (UCTE): association whose purpose is to define the operating rules for interconnections between European countries. This organisation groups together the transmission network operators of continental Europe. The UCTE was founded in the ENTSO-E on the 1st of July 2009.

Use-it-or-lose-it (UIOLI): this rule obliges holders of physical rights to interconnection capacity to submit to grid operators, sufficiently in advance, a firm nomination for the corresponding amount of energy. This firm nomination has three advantages:
- it limits the risk of ill-intentioned market players withholding capacity,
- it allows grid operators to reallocate assigned but unused capacity to the market,
- lastly, it allows grid operators to carry out capacity netting operations and therefore allocate the freed additional capacity.

Use-it-or-sell-it (UIOSI): this rule allows holders of physical rights to interconnection capacity to choose between:
- physically using their rights, by submitting to grid operators, sufficiently in advance, a firm nomination for the corresponding amount of energy,
- transforming their physical rights into financial rights. In this case, unused capacity is automatically reallocated to the market according to the allocation mechanism below, in return for which the initial holder of the rights reaps the benefits of reallocation.

Virtual power plant (VPP): or capacities auctions organised by EDF.
- Basic VPP: products reflecting a power plant under basic operation. The principle is that the bidders pay a fixed premium (in €/MW) every month to reserve available power, and they regularly send EDF a use plan for these capacities. They then pay an exercise price per MWh drawn off, close to the marginal cost of the EDF nuclear power stations. So we have a pricing structure of the form “fixed cost + variable cost”.
- Peak VPP: products reflecting a power plant operating in peak hours. The principle is the same as for the basic VPP, but the price paid for each MWh drawn is an approximation of the marginal cost of EDF peak hour power plants. Bearing in mind this high variable cost, the fixed premium paid by the bidders is lower than that paid for VPPs.

Withdrawal: physical consumption of sites or the sale of energy (export or declared supply) that represents consumption within a given perimeter.

5. Acronyms

ACER: Agency for the Cooperation of Energy Regulators
ADEME: Agency for the environment and energy management
ATRD: Third-party access to distribution networks
ATRT: Third-party access to transmission networks
ATTM: Third-party access to LNG networks
BALIT: Balancing Inter TSO
CART: Transmission grid access contract
CASC-CWE: Capacity Allocation Service Company for the Central-West-European Electricity Market
CEER: Council of European Energy Regulators
CoRDiS: Standing Committee for Dispute Settlement and Sanctions
DG COMP: Directorate General for Competition of the European Union
DGCCRF: General Directorate for Competition Policy, Consumer Affairs and Fraud Control
DGEC: General Directorate for Energy and Climate
EEX: European Energy Exchange
ENTSO: European Networks of Transmission System Operators
EPEX: European Power Exchange
ERDF: Électricité Réseau Distribution France
ERGEG: European Regulators Group for Electricity and Gas
DSO: Distribution system operator
GCC: Gas combined cycle
GrDF: Gaz Réseau Distribution France
GRTgaz: Gestionnaire de Réseau de Transport Gaz
GTC: Consumer working group
GTE: Electricity working group
GTG: Gas working group
HV: High voltage
INSEE: National Institute for Statistics and Economic Studies
LDC: Local distribution company
LNG: Liquefied natural gas
LPX: Leipzig Power Exchange
LV: Low voltage
MEEDDAT: French Ministry of Ecology, Energy, Sustainable Development and Territorial Development and Town and Country Planning
MEEDDM: French Ministry of Ecology, Energy, Sustainable Development and the Sea
NBP: National Balancing Point
NGIL: National Grid Interconnectors Limited
NOME: New electricity market organisation
OPEX: Operational expenditure
PEG: Gas exchange point
PITD: Transmission/distribution interface point
RTE: Réseau de Transport d'Électricité
SNET: Société Nationale d'Électricité et de Thermique
STMFC: Société du Therminal Méthanier de Fos Cavaou
TaRTAM: Transitional regulated tariff for balancing markets
TIGF: Total Infrastructures Gaz France
TSO: Transmission system operator
TTF: Title Transfer Facility (Dutch virtual gas hub)
TURPE: Tariffs for use of the public electricity grids
UCTE: Union for the Coordination of Transmission of Electricity
UFE: French Electricity Union
UIOLI: Use-it-or-lose-it
UIOSI: Use-it-or-sell-it
VIC: Vertically integrated company
VPP: Virtual power plant

6. Units and conversions

6.1. Gas

Volume

1 cubic metre (m^3) = 35.315 cubic feet (pi^3)

1 ton of liquefied natural gas (t LNG) = 1,350 m^3 of gas

1 m^3 of LNG = 593 m^3 of gas

Converting mass and volume into energy

1,000 m^3 of natural gas = 0.816 ton of oil equivalent (toe)

1 m^3 of natural gas = 10.8 kilowatt hours (kWh)

1 metric ton of LNG = 1.3 toe

Converting mass and volume into Btu (International Energy Agency conventions)

Equivalent to	LNG	Gas			
		Norway	Netherlands	Russia	Algeria
1 m^3	39,343	40,290	33,550	35,855	37,125
1 kg	51,300	49,870	42,830	51,675	47,920

Energy equivalence table

Equivalent to	GJ	kWh	MBtu	th	therm
1 gigajoule (GJ)	1	277.8	0.948	238.9	9.479
1 kWh	$3.6*10^{-3}$	1	$3.411*10^{-3}$	0.86	$3.411*10^{-2}$
1 million MBtu	1.055	293.2	1	252	10
1 thermie	$4.186*10^{-3}$	1.162	$3.968*10^{-3}$	1	$3.968*10^{-3}$
1 therm	0.1055	29.32	$1*10^{-1}$	25.2	1

1 barrel of oil (West Texas Intermediate. WTI) = 0.17 MBtu (USDOE conventions)

6.2. Electricity

The standard unit used to measure electrical power (i.e., energy per unit of time) is the watt (W). The watt represents the amount of power corresponding to the generation of one joule (J) of energy per second.

The joule is defined as the work done by a force of one Newton acting to move an object through a distance of one metre in the direction in which the force is applied, given that a Newton is the force required to accelerate a mass of 1 kilogramme at the rate of 1 metre per second.

The kilowatt-hour (kWh) is the amount of energy consumed by a 1-kW appliance in one hour.

The volt (V) or kilovolt (kV) is a unit of voltage expressing the difference in electrical potential across two points of a conductor carrying a constant electric current of one ampere (unit measuring the intensity of electric current), where power dissipation between the two points is equal to one watt.

In the field of energy, coefficients used to multiply base units apply in the same way as for other units, as explained in the table below:

Factors	Units of power	Units of energy
Kilo (k)	Kilowatt (kW) i.e. 1,000 W	Kilowatt hour (kWh) i.e. 1,000 Wh
Mega (M)	Megawatt (MW) i.e. 1,000 kW	Megawatt hour (MWh) i.e. 1,000 kWh
Giga (G)	Gigawatt (GW) i.e. million of kW	Gigawatt hour (GWh) i.e. million kWh
Tera (T)	Terawatt hour (TW) i.e. billion of kW	Terawatt hour (TWh) i.e. billion kWh

7. Index

8. List of boxes, figures and tables

8.1. Boxes

8.2. Figures

8.3. Tables

9. Contents

PART 6
THE CRE IS CONTRIBUTING TO THE SMOOTH OPERATION OF ELECTRICITY AND GAS MARKETS TO THE BENEFIT OF CONSUMERS

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