

THE REGULATOR'S ROLE IN THE INTEGRATION OF RENEWABLE POWER IN DISTRIBUTION GRIDS

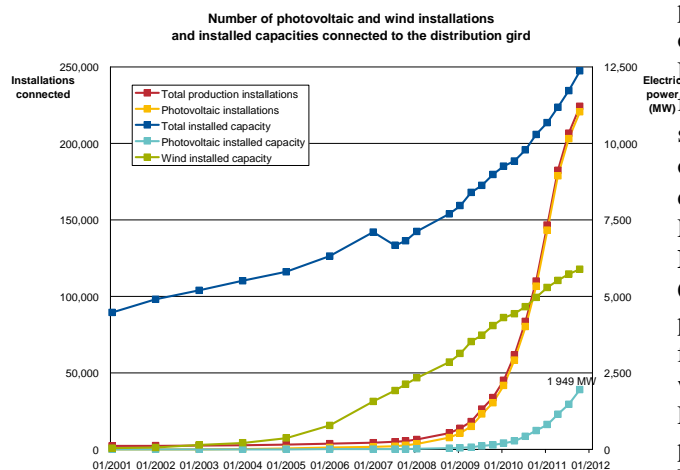
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The fight against climate change, through rising feed-in tariff policies in France, has resulted in the increase of renewable energy in the electricity production mix. Some of the renewable sources are centralised as in large wind farms for example. Others are decentralised such as photovoltaic panels installed on the roofs of homes. The former are mainly connected to transmission networks and the latter to distribution networks. The number of such installations connected to the French distribution networks has greatly increased since 2008. These individual sources are difficult to predict and control and highly variable. In addition, customers no longer simply consume electricity, but inject it as well, which requires bidirectional flows on networks originally designed to transport electricity in only one direction.



All these changes imply in-depth modifications in the planning and operation of distribution grids.

The French regulator's (CRE) missions are:

- to participate in the implementation of mechanisms to support electricity production and electricity supply,
- to guarantee access to public electricity grids,
- to ensure proper operation and development of electricity grids.

Therefore, it has a major role to play in the successful integration of renewables in distribution grids at national and European levels.

THE IMPLEMENTATION OF SUPPORT MECHANISMS FOR THE INTEGRATION OF RENEWABLE ENERGY IN THE GRID

CRE participates in the implementation of support mechanisms for the integration of renewable energy in the grid.

Carrying out development of renewable energy under reasonable economic conditions

The role of CRE is to ensure that development of renewable energy is carried out under reasonable economic conditions. CRE oversees tendering procedures launched by the Ministry of Energy within the framework of the multiannual investment plan (PPI) for electricity generation. It formally advises the government on feed-in tariffs for cogeneration and renewable plants and manages the compensation mechanism for the power suppliers who are obliged to buy renewable electricity under the feed-in tariffs conditions.

Tenders

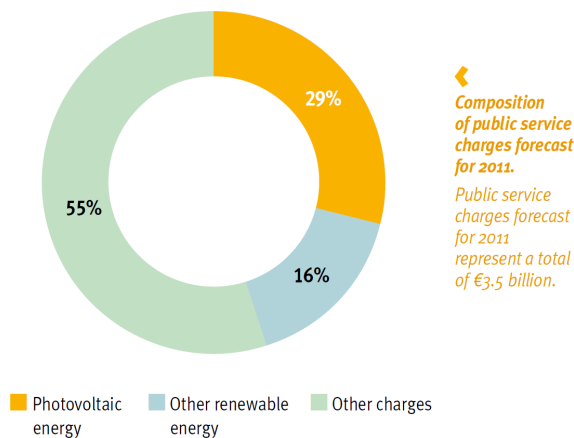
As part of multi-annual programming of electricity production, if production capacities do not meet objectives, despite operators' initiatives, the Minister for Energy may then open tenders, which CRE is responsible for implementing. CRE ensures the preparation of the scope statement, the tally of the offers and issues an opinion on the candidates, among which the Minister designates the candidate(s) to be selected (see article L. 311-10 of the French code of energy).

Feed-in tariffs

CRE issues an opinion on the orders for fixing the purchase conditions of energy produced from small facilities, energy produced from recovery of household waste or energy using renewable sources (obligation for EDF and non-nationalised distributors to purchase energy produced by these producers) (see article L. 314-4 of the French code of energy).

Contribution to the public electricity service (CSPE)

CRE estimates the level of costs attributable to public service tasks, which are subject to full compensation in accordance with article L. 121-10 of the French code of energy and proposes to the Minister of Energy the level of public service charges and the amount of the contribution applicable to each kilowatt-hour. It also proposes to the Ministers of Energy and the Economy the amount of repayments to be made to the operators who bear public service charges (see article L. 121-13 of the French code of energy).



Making regulatory decisions regarding the technical and financial conditions of connection to electricity grids

Connection to the electricity grid is a prerequisite to grid access; power plants using renewable energy sources need to be connected to the grid to allow them to feed in electricity into the grid and to sell it, regardless of whether or not they benefit from feed-in tariffs or tenders. One of CRE's main missions is to guarantee that access to the electricity grid is transparent and non-discriminatory.

In order to reach this goal, CRE makes regulatory decisions regarding the technical and financial conditions for connection to electricity grids, and advises the government when making regulatory decisions related to access to electricity grid.

Procedures for processing requests for connection to electricity distribution grids

Distribution and transmission grids may have limited injection capacity thus limiting the amount of power generation sources that can be connected to the grid, at a given place and time. As access to the grid is guaranteed by the energy law, distribution grid operators need to ensure that all required engineering work is carried out in order to satisfy all connection requests. In addition, the requests for grid connection can temporarily exceed the capacity of distribution grid operators to process them, especially when incentive schemes are very favourable.

As a consequence, the procedures for processing requests for connection to electricity distribution grids have to take these two limitations into account and ensure that requests for connection to the grid are processed in a transparent and non-discriminatory way.

Because of the lack of a regulatory framework in this field, CRE decided to draw up guidelines for setting up, for defining the content and for monitoring such procedures. All distribution grid operators then had to put these procedures into place and implement them, within this new regulatory framework. CRE is now monitoring the implementation and the evolution of the procedures for processing requests for connection to the electricity grid. In particular, CRE consults producers and distribution grid

operators in order to take into account the concerns that may arise regarding connection to the electricity grids.

The bearing of connection costs

Connection costs include the cost of all grid works necessary to allow a producer to feed into the grid all the power his plant produces. These costs are shared between the producer and all the other grid users, via the national tariff for the use of the public electricity grid.

The way connection costs are shared is of great importance in order to allow for the development of renewable energy production. The sharing of connection costs is precisely defined by the energy law: as a general principle, costs related to the connection of a specific power generation facility are borne by the producer, while costs associated with the reinforcement of existing electricity grids or development of new grid infrastructures benefiting all users are borne by all the grid users. The role of CRE is to approve or monitor the methods used by distribution grid operators to calculate the price of connection works borne by the producers.

In addition, CRE advises the government when making regulatory decisions regarding the sharing of connection costs.

Regulating disputes between operators and users of electricity grids: the CoRDIS

CRE is very active in discussions between stakeholders and helps reach consensus on a number of controversial issues related to grid access. CRE can be referred to by the parties concerned for any dispute concerning access to electricity distribution grids, linked to the access to the aforementioned services, facilities and installations or to their use in accordance with articles L. 134-19 to L. 134-24 of the French code of energy.

These powers are exercised by the Committee for dispute settlement and sanctions (CoRDIS) established by the law of 7 December 2006 concerning the energy sector.

CoRDIS is responsible by law to regulate, in their technical and financial aspects, disputes between operators and users of electricity grids.

CoRDIS, which is independent of the Board of commissioners, allows CRE to carry out a fundamental mission: ensuring transparent and non-discriminatory access to energy networks, the key to opening up to competition.

After inter partes investigation, CoRDIS makes a decision to resolve disputes in principle within two months, this time can be extended to four months if the committee deems it necessary. At the same time a request for provisional measures can be made. Its decisions may be appealed at the Court of Appeal of Paris, which may order a stay of execution.

THE DEVELOPMENT AND THE PROPER OPERATION OF ELECTRICITY GRIDS

CRE ensures the development and the proper operation of electricity grids.

Studying expected additional costs in grids due to renewables in order to set fair targets for system operators

Development of electricity distribution grids is essential for the expansion of renewable energy sources and their integration in the power system. Connection capacity on the electricity grid is limited and depends on the location. It is essential to upgrade infrastructures in order to connect more renewables. CRE studies the forecasting additional costs in grids due to renewables in order to set fair targets for system operators.

Within the framework of the preparation of the fourth tariffs for the use of electricity transmission and distribution grids (TURPE 4), CRE has led a study on costs and benefits generated by the connection of PV generation to distribution grids.

When consumption is lower than local generation, connection of photovoltaic panels to distribution grids can help to reduce technical losses, which is of a benefit to the electricity system. But compared to traditional generation plants, photovoltaic generation is difficult to predict and to control and highly variable. Therefore, it cannot be controlled according to the level of demand and sometimes generation is higher than consumption. Local generation excess produces voltage variations. To avoid this situation which is prejudicial to end-users, grid reinforcements are necessary, through creation or replacement of facilities.

Ensuring proper quality in distribution grids

The increase in the production of electricity generated from renewable sources is being carried out in the context of a growing demand for electricity quality, especially in terms of voltage quality and continuity of supply. As integration of renewable energy sources can cause problems of quality in grids, CRE's role is to monitor quality on distribution grids in accordance with its mission to ensure the proper operation of electricity grids.

CRE encourages talks between numerous stakeholders and proposes new regulatory texts or new rules for system operators if necessary.

At the European level, national regulators and the recent Agency for the Cooperation of Energy Regulators (ACER) play an important role in defining rules for the connection of renewable plants to the grid, which aim in particular to prevent any detrimental effect upon electricity quality.

This burning issue – a public consultation on a new European “network code” started in late January 2012 – may require much work from regulators in order to reach consensus between system operators (generally calling for stringent requirements) and manufacturers or producers

(worried about the extra costs they may have to bear).

The ACER, required to issue a reasoned opinion prior to the final approval of the European Grid Codes by the European Commission, plays the central role. National regulators are to provide support in the consultation process, and remain in charge of supervising many “local issues” not dealt with in the European code.

Developing renewable energy and reducing carbon emissions requires upgraded electricity grids and Smart metering systems. Indeed, the evolution of the electricity grid is a key challenge for Europe's electricity grids. Their development is one of the objectives of an effective regulatory framework. CRE has to strive to achieve grids that can underpin the goal of resilient, sustainable, competitive electricity. Smart Grids play a vital role in this context. They are a rational, proportional and necessary response to the challenges that the electricity sector faces, and especially for the integration of renewable energy sources.