Public consultation

7 June 2012

Extract from the public consultation by the French Energy Regulatory Commission on 7 June 2012 on the regulatory framework of electricity grid access tariffs

Articles L.341-1 and seq. of the French Energy Code grant to the Energy Regulatory Commission (CRE) the powers to set electricity grid access tariffs (TURPE).

Article L.341-2 of the Energy Code states in particular that "*the tariffs for using the public transmission network and the public distribution networks shall be calculated in a transparent and non-discriminatory manner and shall cover all the costs borne by the operators of these networks insofar as such costs correspond to those of an efficient network operator*".

Article L.341-3 of the same code states that CRE "*propose a multiannual tariff framework together with appropriate short- or long-term incentives to encourage transmission and distribution network operators to improve their performance particularly as regards the quality of the electricity, to encourage the integration of the domestic electricity market, to improve reliability of supplies and to find ways to improve productivity*".

The tariffs that have been in force since 1 August 2009 (TURPE 3) were designed to apply over a four-year period. The next set of tariffs (TURPE 4) is therefore due to come into force on 1 August 2013. With this in mind and as required by the law, CRE intends to extend and update the incentives established under TURPE 3.

CRE therefore wishes to collect market players and stakeholders' opinions on its proposals for the next tariff period.

This document is taken from the public consultation document regarding the regulation framework. It contains only the section dedicated to interconnection investments.

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1.1. Interconnection investments

1.1.1. Background

A regulatory framework that fosters the construction of interconnection capacities is necessary to the creation of an integrated European electricity market with minimum congestion at national borders. In addition, a lack of investment into cross-border infrastructures could, given the development of intermittent renewable energy sources, hamper the optimization of the electricity system thereby increasing the risk of disruptions to supply and requiring costly changes in peak-time and balancing generation. It is therefore essential that investment into interconnections is made by the required deadline.

The main difference with national investments is that interconnection projects come up against specific difficulties that can complicate the task of the transmission system operator and require extra effort on his part to ensure they get completed.

Crossing over the natural obstacles (seas, mountains, rivers) existing at most national borders can raise many difficulties and require specific technical solutions.

In addition, building such infrastructures requires extensive coordination with the operators of neighboring networks.

Finally, the social acceptability of interconnection projects is often a delicate issue since their usefulness for the electricity system is generally not as obvious as that of national projects which offer returns that can be more easily quantified especially in terms of reliability of supply or connection.

These issues explain the significant delays encountered in most interconnection projects. Nevertheless, as regards the benefits that interconnection projects bring to the community[1], it is essential to have a regulatory framework that will encourage RTE to develop these infrastructures as much as possible, as soon as possible and with minimum investment costs. The mechanism described herein is intended to meet these objectives.

1.1.2. Implementation of the incentive mechanism

a) Calculating the incentive

The proposed mechanism consists in rewarding RTE for building new interconnection capacities that will be useful for the European electricity system by allocating it some of the net social economic welfare generated by each project. The incentive can be expressed using the following overall formula:

$$I = \gamma \cdot (\Delta S - Ai)$$

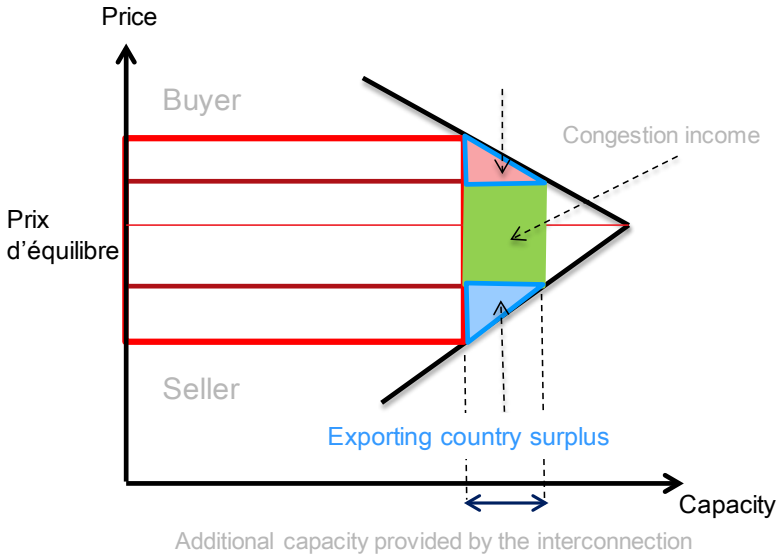
Where:

- *I*: Incentive for RTE;
- *γ*: sharing factor used to calculate the part of the net social economic welfare allocated to RTE, defined on the basis of any matrices setting out how costs and profits are shared between the interconnected zones ;
- ΔS : Gross social economic welfare created by the new interconnection;
- *Ai*: Investment annuity.

The gross social economic welfare ΔS is the sum of the social economic welfare for the exporting country, the social economic welfare for the importing country and the congestion income. The figure hereafter

[1] Economic studies carried out by the network operators as part of the European ten-year network development plan have found that a certain number of interconnection projects offer very high added value for communities. At some borders currently experiencing congestion, the building of new interconnection points would generate a net collective social economic welfare of tens of millions of euros per year and per GW of additional commercial capacity.

represents the gross social economic welfare using a graph showing the net export curves of two interconnected countries.



The gross social economic welfare generated by installing additional capacity can therefore be estimated using the equation:

$$\Delta S = \frac{1}{2} \cdot (p(a) - p'(a)) \cdot \Delta F + \left(p'(a) - p'(v)\right) \cdot \Delta F + \frac{1}{2} \cdot (p'(v) - p(v)) \cdot \Delta F$$

Where:

- $\frac{1}{2} \cdot (p(a) - p'(a)) \cdot \Delta F$ is the social economic welfare of the importing country;
- $\frac{1}{2} \cdot (p'(v) - p(v)) \cdot \Delta F$ is the social economic welfare of the exporting country;
- $\left(p'(a) - p'(v)\right) \cdot \Delta F$ is the congestion income.

Where:

- $p(a)$: price in the importing country before the commissioning of the interconnection;
- $p(v)$: price in the exporting country before the commissioning of the interconnection;
- $p'(a)$: price in the importing country after the commissioning of the interconnection;
- $p'(v)$: price in the exporting country after the commissioning of the interconnection;
- ΔF: additional commercial flows.

By calculating the incentive in this manner, RTE should receive, in addition to the income from all its assets, an additional income from any interconnection project classified as priority. The amount of this additional income will be directly proportional to the added value that the new interconnection represents for the community. This added value also includes RTE's ability to complete the project as quickly as possible, to maximise available capacities and to minimise investment costs. In addition, the strength of the incentive decreases as congestion falls, thereby discouraging any over-investment and guaranteeing the efficiency of the system. The advantage of such an incentive mechanism is that it covers all the key elements of an investment project whilst being non-intrusive, since RTE is free of arbitrating between these elements.

b) Determining the parameters

The proposed incentive mechanism is based on the prices of electricity in the importing and exporting countries, the additional commercial flows made possible by the interconnection and the investment costs. There are several ways for determining the value of each of these factors.

A first method for determining these market prices, commercial flows and investment costs involves using the actual values observed after the commissioning of the interconnection. This approach, which has the benefit of being based on reality rather than forecasts, is in theory the most effective. Its disadvantages however are the volatility and unpredictability of the incentive, a large portion of which cannot be controlled by RTE thereby creating a financial risk that could hinder investment if it is seen as too high compared to the expected return. We should however note that, whatever the case, the incentive will be capped and floored in order to limit any financial risk (see section C).

Another method is to set the parameters that are least under RTE's control in advance and then afterwards to monitor those parameters over which RTE has most control. This method seems to have a better efficiency-to-risk ratio.

Price

It is a reasonable assumption that wholesale market electricity prices (for the importing and exporting countries, before and after the commissioning of the interconnection[2]) are beyond RTE's control. Any fluctuation between the date of the investment decision and the date on which the interconnection is put into service therefore creates a risk for RTE. We propose fixing these parameters in advance, at the same time as RTE decides to make the investment. This would therefore remove the financial risk caused by price volatility. However, the chosen method must not allow for any bias in the values of these parameters. CRE therefore intends setting them objectively based on forward prices, spot price profiles and resiliencies[3] observed at the time of the investment decision.

Investment annuity

The investment annuity (Ai) comes directly from the investment cost and the average weighted cost of capital determined in the frame of the grid access tariffs regulation. The investment cost is considered controllable by the network operator. It is suggested that the investment annuity be determined based on actual investment.

Commercial flows

The additional commercial flows (ΔF) made possible by the new interconnection capacity can be calculated as the product of:

- the maximum commercial capacity;
- the availability of the commercial capacity, which depends on congestion in the upstream networks;
- the technical availability of the installation itself, which depends on the occurrence of any incidents or maintenance;
- the interconnection commercial utilization rate.

The additional commercial flows observed will reflect the network operator's investment and operational performance. It is therefore justified to link the incentive to the additional commercial flows observed after the commissioning of interconnection. At this stage, CRE believes that the most effective solution would be to determine the increase in commercial flows by observing their evolution after the commissioning of the interconnection.

[2] The prices after the commissioning of the interconnection will be estimated in advance using the market prices beforehand, resilient prices and the expected increase in commercial capacity created by the new interconnection.

[3] Price resilience can be estimated using historical prices and demand in each of the two interconnected countries. They are also calculated and published by power exchanges.

However, commercial flows can be affected by external factors over which RTE has little control. For example, insufficient investment into the upstream network of a neighbouring country is likely to reduce commercial capacity but RTE cannot be held directly responsible for this. We note however that this residual risk can be offset by establishing limits to the bonuses and penalties to limit the corresponding financial risk.

c) Mitigating the financial risk linked to the incentive

In order to ensure that the network operator is not excessively rewarded by the incentive scheme - which would affect grid access tariffs - or on the contrary excessively penalized by the payment of a penalty, CRE plans to cap and floor the amount of the incentive. The cap and floor values will depend on how strong CRE wants the incentive to be for RTE. They can be set either the same distance above and below the remuneration rate, or asymmetrically. An asymmetric scheme would be retained based upon a detailed analysis the potential risks for the network operator.

d) Duration of the incentive mechanism

CRE intends to apply the incentive scheme over about one tariff period, starting from the date of commissioning of the interconnection. This relatively short period will ensure that any parameters set in advance will remain relevant over the whole time during which the scheme is in force and that the risk of any major structural changes - which would jeopardize its validity - is kept to a minimum. In order to ensure the mechanism remains a true incentive, the shorter the period over which it is applied the higher the annual amount of the incentive received. CRE will ensure that the incentive is redistributed over a sufficiently long period to guarantee it has a limited impact on tariffs changes.

e) Example of gross social economic welfare calculation

In order to illustrate the method for calculating the social economic welfare, let us estimate the social economic welfare that would be generated by an additional 1,000 MW interconnection capacity between two countries over any given hour.

Let us therefore consider country *a* and country *v* between which a 1,000 MW interconnection capacity will be built. Let us consider the price hypotheses of €33/MWh in country *a* and €30/MWh in country *v* before the investment decision, meaning a difference of €3/MWh between the two countries before the commissioning of the interconnection. Finally, let us suppose that the price resiliencies ($|\Delta p(a)|$ et $|\Delta p(v)|$) are €0.0011/MWh/MW for country *a* and €0.0013/MWh/MW for country *v*:

- $p(a)$ = €33/MWh;
- $p(v)$ = €30/MWh;
- $|\Delta p(a)|$ = €0.0011/MWh/MW;
- $|\Delta p(v)|$ = €0.0013/MWh/MW;
- $\Delta Fprev$ = 1,000 MW.

The forecast price difference can be derived from these five parameters after the commissioning of the interconnection:

$$p'(a) - p'(v) = \big(p(a) - p(v)\big) - (|\Delta p(a)| + |\Delta p(v)|) \cdot \Delta F_{prev} = 0{,}6\ €/MWh$$

For an additional commercial capacity ΔF over the given hour is 800 MW, the social economic welfare can therefore be calculated as the sum of the social economic welfare for the exporting country S_v, the social economic welfare for the importing country S_a and the congestion income RC. We should point out that the congestion income benefits the users of the network through a price reduction in the short- or long-term and therefore it plays a significant part in consumer satisfaction.

Calculating the social economic welfare of the exporting country:

$$S_v = \frac{1}{2} \cdot (|\Delta p(v)| \cdot \Delta F) \cdot \Delta F = 416\ €$$

Calculating the social economic welfare of the importing country:

$$S_a = \frac{1}{2} \cdot (|\Delta p(a)| \cdot \Delta F) \cdot \Delta F = 352\ €$$

Calculating the congestion income:

$$RC = \big(p'(a) - p'(v)\big) \cdot \Delta F = 480\ €$$

The total gross social economic welfare per hour is therefore calculated at €1,248.

This method can be calculated for "sample hours" based on the usage observed at each hour of the year. The social economic welfare generated over a year is then calculated as the sum of the hourly social economic welfare generated by this interconnection.

Q25: Would you support the introduction of a financial incentive to encourage investment into interconnections?

Q26: Do you think the proposed incentive scheme will help meet the requirement to increase power exchange capacities?

Q27: Do you think it right to base the incentive on net social economic welfare?

Q28: What level of risk do you think RTE should bear in terms of investment into interconnections?

Q29: Would you be in favour of determining market prices and market resilience in advance in order to calculate the incentive?

Q30: Would you be in favour of calculating the incentive based on actual investment costs rather than predictions?

Q31: What do you think of the suggestion to calculate the incentive based on actual additional commercial flows rather than forecasts?

Q32: Do you agree with setting maximum values for the bonus or penalty? If yes, do you think the cap and floor values should be same distance above and below the remuneration rate, or asymmetrically? What do you think would be suitable levels for capping and flooring the incentive?

2. Public consultation

CRE would like to invite all parties involved to send their input by no later than 20 July 2012:

- by email to: dare.cp1@cre.fr;
- via the "Documents/Public Consultations" section on CRE website (www.cre.fr);
- by post to: Energy Regulation Commission
  Electricity Network Access Department
  15, rue Pasquier
  75379 Paris Cedex 08
  France
- by contacting CRE directly (Electricity Grid Access Department) on +33 (0)1 4450 4102.

CRE will publish a summary of all contributions, subject to respecting privacy and confidentiality as required by law. Contributors are asked to state which elements of their feedback they would like to remain anonymous and/or confidential.