

Decision of the French Energy Regulatory Commission (*Commission de Régulation de l'Énergie - CRE*) on 17 July 2014 determining the incentive-based regulatory framework for ERDF's smart metering system for low voltages (LV) ≤ 36 kVA

Present at the meeting: Philippe de Ladoucette, Chairman, Olivier Challan Belval, Catherine Edwige, Hélène Gassin and Jean-Pierre Sotura, Commissioners.

Having regard to the French Energy Code (*Code de l'Énergie*), in particular Articles L. 341-3 and L. 341-4.

Introduction

The objective of ERDF's project for a low voltage (LV) smart metering system ≤ 36 kVA is to deploy 35 million smart-meters between the last quarter of 2015 and the end of 2021. The target deployment rate is 90% of all meters.

In France, the development of smart-meters represents the third electricity meters generation, following electro-mechanical and electronic meters.

Beyond the obligations imposed by national and European legislation, features of the new generation of meters were defined between 2007 and 2011 in consultation with the stakeholders under the aegis of the CRE and the public authorities. This new generation of meters offers wider opportunities in a context in which both the electricity market and the energy market as a whole are changing significantly:

- it may be used to manage consumer equipment and will help limit consumption during periods when consumption peaks;
- it will ease consumers' daily lives (remote reading and management);
- it will help them control costs by relaying more accurate and detailed information about their actual consumption;
- it will enable suppliers to offer tariffs adapted to each consumer's needs, with prices that vary according to the time of year or day;
- lastly, advanced meters are essential to the development of intelligent electricity networks, or "smart grids".

Legal framework

Directive 2009/72/CE of 13 July 2009 from the European Parliament and Council concerns common rules for the internal market in electricity. Annex I on consumer-protection measures states in Paragraph 2 that "*Member States shall ensure the implementation of intelligent metering systems that shall assist the active participation of consumers in the electricity supply market. The implementation of those metering systems may be subject to an economic assessment of all the long-term costs and benefits to the market and the individual consumer [...]*".

It also states that "*Where roll-out of smart meters is assessed positively, at least 80% of consumers shall be equipped with intelligent metering systems by 2020*".

These provisions in the Directive have been transposed into French law. Article L. 341-4 of the French Energy Code (formerly point IV of Article 4 of the French Law of 10 February 2010) thus states that distribution-network operators should implement systems enabling suppliers to "offer their customers prices varying with the time of year or day, encouraging network users to restrict their consumption at periods when overall consumer consumption is highest".

Article 18 of the French Law of 3 August 2009 on implementing the Grenelle Environment Forum also provides that the "objectives for efficient and restrained energy use require mechanisms to adjust and reduce energy consumption at peak times. Implementing such mechanisms will in particular involve installing smart meters for individual consumers [...]. It also implies the widespread use of smart meters, so that residents are better informed about their energy consumption as it happens, and thus can control it".

A Decree from the French Council of State (*Conseil d'Etat*) (Decree 2010-1022 dated 31 August 2010 on metering provisions for public electricity networks, applying Article 4 (IV) of the French law of 10 February 2000), was based on a CRE proposal. It confirmed the experimental pilot that the CRE had requested from ERDF in its communication of 6 June 2007, and asked the CRE to propose an Order to the French Energy Minister defining features and specifications for smart metering systems, based in particular on results from the pilot and on the system's interoperability requirements.

The Decision of 11 February 2010 provides guidance on the implementation and the assessment methodology of ERDF's pilot project in order to develop metering systems for low voltages and low powers (≤ 36 kVA). It set the timescale for the experiment and published an evaluation grid defining how it should be assessed. The CRE also stressed that the evaluation should be complemented by an appraisal of the economic and financial aspects of the project and also of aspects relating to interoperability. In this context, the CRE commissioned a technical and economic study in 2011 in order to assess the costs and benefits related to ERDF's smart-metering project.

In its Decision of 7 July 2011 communicating the results of the ERDF pilot studies on the smart metering system *Linky*, the CRE proposed to deploy ERDF's smart-metering system. It also stated that the technical and economic analysis carried out in 2011 showed that the net present value (NPV) of the project for the distribution activity would, on the assumptions made, be slightly positive. With the future savings in operating costs associated with installing the *Linky* meter, the calculated NPV is around €+0.1 billion₂₀₁₀, for an initial investment of €4.3 billion at current value during the phase of large-scale deployment.

The Order provided in the Decree of 31 August 2010 was enacted on 4 January 2012, based on a CRE proposal dated 10 November 2011.

Tariff framework and incentive-based regulation

In its Decision of 12 December 2013 deciding on the tariffs for the use of a low-voltage or medium-voltage public electricity grid, the CRE confirmed what it had indicated several times to ERDF: that because the *Linky* project had exceptional technical, industrial and financial features, the CRE would look favourably on a request for a specific regulatory framework covering the costs over an extended period coinciding with the period during which the project's expected benefits were realized. It also said that ERDF, which would manage the deployment, would bear its share of the inherent risks in the project and its timetable. The CRE's role would be to provide appropriate regulation ensuring that the distribution system operator reached the expected performance level. Lastly, it stated that in consequence, it would look favourably on a request for a bonus payment for the project payable over the lifetime of the new meters. In this regard, the project would be subject to an *ad hoc* tariff Decision.

At the beginning of October 2013, ERDF issued an invitation to tender for the procurement of 3 million meters published in the European Union's *Official Journal*. In a letter dated 21 November 2013, ERDF informed the CRE of its desiderata regarding the general principles for the *Linky* project's tariff framework. These general principles were described more precisely by ERDF during exchanges with CRE Departments and at hearings before the CRE.

Based on this information, the CRE has continued to prepare a specific regulatory framework for the project. An exceptional amount (around €5 billion in total) will be invested in the project in the period between 2014 and 2021, and a tariff-smoothing mechanism will be used (see Section B.3) to spread the costs over time so that they fall during the period in which the expected benefits are realized. This requires that ERDF be kept fully informed throughout the project lifetime. For these reasons, the operator wants the tariff framework to

be fixed for the project's entire duration (around 20 years, and in view of the circumstances, the CRE has responded favourably to the request.

The regulatory framework planned for the *Linky* project was the subject of a public consultation organized by the CRE in May 2014. ERDF and its shareholder were also heard by the CRE.

Given ERDF's business plan and the extra expense of reaching a deployment rate of 95% by the end of the large-scale deployment phase, the CRE will propose an amendment to the French Decree of 31 August 2010 that in particular reduces the rate to 90%.

Purpose of the Decision

The *Linky* project differs from standard ERDF projects in terms of cost, but also in its expected benefits and its deployment time (slightly over six years).

Given the size of the project and the need to guard against any drift in costs or forecasted completion times, a specific regulatory framework has been implemented that gives ERDF incentives to:

- control investment costs;
- comply with the deployment timetable;
- guarantee the performance level expected from the *Linky* metering system.

In addition, for assets related to the *Linky* project and commissioned between January 1st, 2015 and December 31st, 2021, the CRE has selected a remuneration scheme that gives ERDF an incentive to optimize the quantity/cost-of-debt ratio by allowing the network operator to keep any gains arising from the optimization. In return, ERDF will bear the impact of any poor performance, for instance if the actual cost of the debt is higher than the target cost used by the CRE.

Under the Articles from the Energy Code quoted above, this Decision defines the regulatory framework specific to ERDF's smart metering system. It therefore modifies and supplements the methodology used to establish the tariffs provided in the Decision of 12 December 2013 deciding on the tariffs for the use of a low-voltage or medium-voltage public electricity grid. Because a smoothing mechanism has been set up, as described in Section B.3, the tariff currently in force does not change.

Smart metering projects run by local distribution companies (*Entreprises Locales de Distribution - ELD*), may have particular features that lead to different costs, compared to ERDF's costs. The CRE stresses that ERDF's contribution to the Electricity Equalization Fund (*fonds de péréquation de l'électricité - FPE*), provided in Article L. 121-29 of the French Energy Code, is taken into account when calculating the tariff for using public electricity networks (*Tarif d'Utilisation des Réseaux Publics d'Électricité - TURPE*). This means that the ELD costs, as estimated by the FPE, are covered by the TURPE.

The French Higher Energy Council (*Conseil Supérieur de l'Énergie*), consulted by the CRE over the draft decision, gave its opinion on 10 July 2014.

The CRE asked GRDF and ERDF to coordinate, and to look at possible synergies in the deployment of smart electricity and gas meters. The operators report regularly to the CRE.

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A. Incentive-based regulation of costs, deployment time and performance

Given the size of the project and the need to guard against any drift from the planned costs and deployment timetable, a specific regulatory framework is being established in order to give ERDF an incentive to control investment costs, comply with the deployment timetable and guarantee the expected level of performance of the *Linky* metering system.

1. General principles

Article L.341-3 of the French Energy Code provides that the CRE may make provision for "*appropriate short- or long-term incentives to encourage transmission and distribution network operators to improve their performance, particularly as regards electricity quality; to promote the integration of the domestic electricity market and the security of supply; and to find ways to improve productivity*".

Implementing the *Linky* project will generate risks other than those ERDF habitually faces when carrying out its normal activity, because of the project's exceptional technical, industrial and financial features. Consequently, the CRE considers that ERDF must take some responsibility and be given incentives to lead a successful project, measured by quality of service and adherence to the budget and the deployment timetable. It must also bear the financial consequences of any shortcomings.

In this context, an incentive bonus of 300 basis points is attributed to assets used in the *Linky* project between January 1st, 2015 and December 31st, 2021 (excluding those used for experimental pilots and standard electronic meters). The bonus is awarded throughout the asset life time.

It comprises two parts:

- part one (200 basis points) depends on the performance of ERDF in terms of investment costs and complying with the deployment timetable;
- part two (100 basis points) depends on the performance of the smart metering system in terms of its quality of service.

The incentive bonus is thus part of the overall mechanism that induces ERDF to comply with the project objectives in all aspects (costs, timetable and service quality).

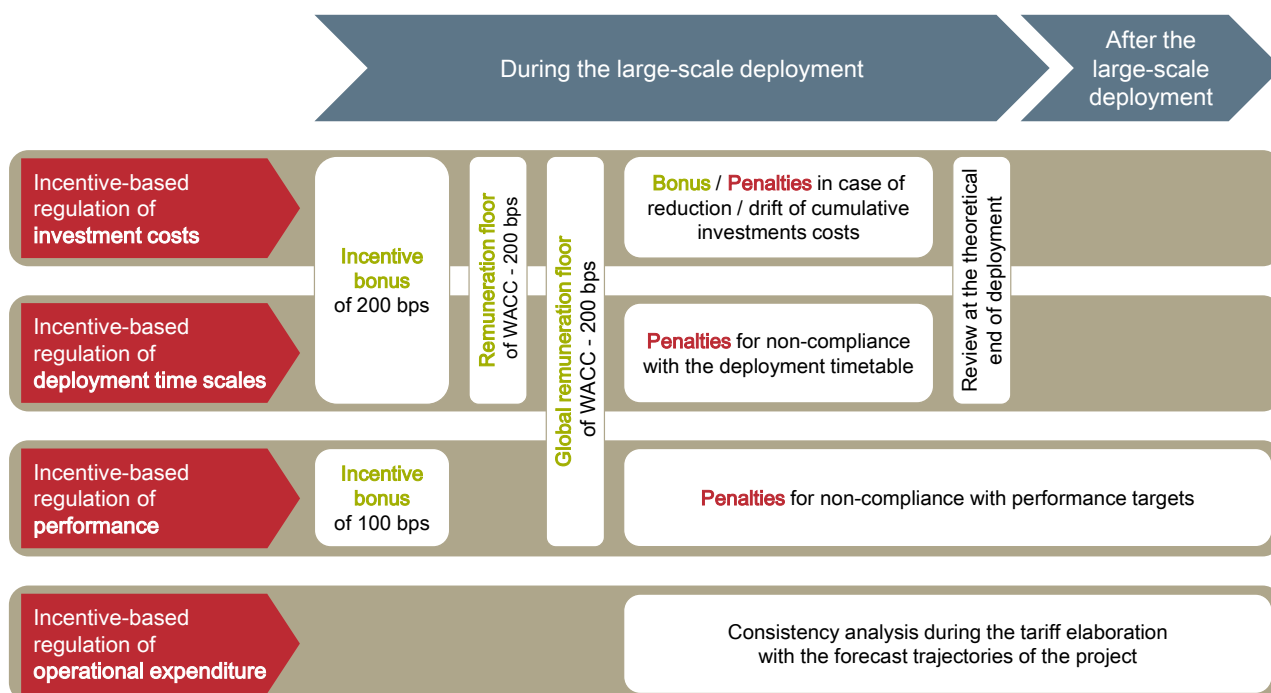
Any failure to meet the overall performance level will reduce the bonus. Beyond a certain level of adverse performance, the project remuneration will fall below the basic rate of return, down to a floor value (see Section A.4).

The incentive mechanism comprises the following:

- an annual review of investment costs, with financial incentives if costs drift or are reduced;
- a biennial review of compliance with the forecasted deployment timetable, with penalties for late deployment;
- a final settlement of the cost and time-scale incentives at the theoretical end of large-scale deployment (i.e. 2021) in order to induce ERDF to make up any delays or cost variances during the large-scale deployment phase. Conversely, if ERDF's performance has deteriorated over the deployment period, it will be more heavily penalized;
- an annual review of the system's performance in terms of quality of service delivered from the start of the deployment phase. Penalties are payable if the predefined objectives are not reached.

Lastly, operating charges affected by the *Linky* project will be monitored specifically, particularly when the next tariffs are being defined. During each tariff year, the CRE will ensure that the pattern of operating charges presented by ERDF is consistent with the projections both for cost reductions (mainly in reading meters, carrying out technical work and buying line losses) and for the costs of operating the metering system (related mainly to the information systems (IS) and system administration).

The incentive-based regulation mechanism defined for the ERDF smart-metering project is illustrated below:



2. Incentive-based regulation of investment costs and deployment time

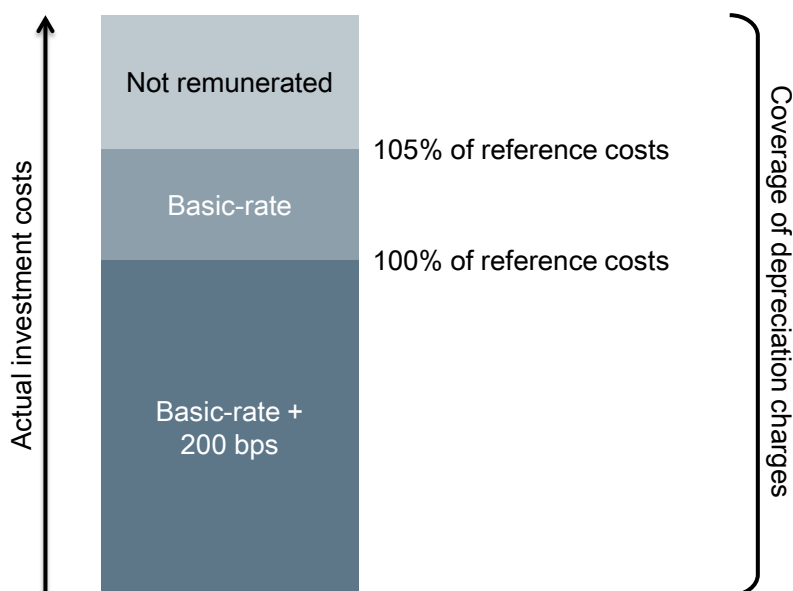
2.1. Incentive-based regulation of investment costs

During the period 2015 - 2021, the amount of investment planned by ERDF in connection with the *Linky* project amounts to €4.7 billion (excluding standard electronic meters).

The incentive-based regulation mechanism implemented by the CRE aims to induce ERDF to make project-related investments at the lowest cost. To do so, it uses the following principles:

- ERDF is penalized from the first euro of additional cost because it loses the bonus of 200 basis points on this additional cost. If the additional costs exceed 5%, any further costs are not remunerated (i.e. no bonus and no base-rate remuneration);
- from the first euro saved, ERDF keeps a bonus equal in amount to the bonus as it would have been with no saving. Grid users benefit from reduced capital charges (lower depreciation and base-rate remuneration).

The incentive-based regulation mechanism is illustrated below:



In practice, the incentives are calculated as follows:

- assets for the *Linky* project brought into use between January 1st, 2015 and December 31st, 2021 (including information systems and assets relating to the pre-deployment phase), excluding assets used for the experimental pilots and standard electronic meters, benefit from a bonus of 200 basis points. The bonus is based on the net book value over the asset lifetime;
- each year, the regulated-asset base (RAB) established on January 1st in the year¹ is compared with a reference RAB;
- the reference RAB on January 1st in the year is established based on the number of meters actually commissioned each year; the full forecasted unit costs of investment for each year (meters, concentrators and other costs excluding IS) and the forecasted costs of information systems. The depreciation of the reference RAB is calculated in proportion to the depreciation of the actual RAB;
- if the actual RAB is greater than the reference RAB, ERDF is charged a penalty equal to the product of the difference between the two RABs and a penalty percentage:
 - for the portion varying by between 0% and 5% from the reference RAB, the penalty rate is equal to 2% for assets benefiting from a bonus;
 - for the portion varying by more than 5% from the reference RAB, the penalty rate is equal to the basic rate of return, increased by 2% for assets benefiting from a bonus;
- if the actual RAB is less than the reference RAB, ERDF is awarded a bonus equal to the product of the difference between the two RABs and a bonus rate of 2%;
- bonuses and penalties are accounted for in the income and expenditure adjustment account (*Compte de Régularisation des Charges et des Produits - CRCP*) and cleared during the annual tariff revision.

For the years 2015 - 2021, the forecasted unit costs are fixed by the CRE based on the ERDF business plan. For the years 2022 and 2023, the unit cost corresponds to the unit cost for 2021 adjusted for inflation. The forecasted costs of information systems are fixed by the CRE based on the ERDF business plan.

Since the invitations to tender for installing *Linky* meters had not been finalized at the date of this Decision, the forecasted pattern both of full unit costs per installed *Linky* meter and of IS costs are defined in a confidential Appendix to this document.

¹ Net book value at 1 January of year *N* of the assets employed in the *Linky* project (including information systems and assets relating to the pre-generalization phase but excluding assets used for the experimental pilots and standard electronic meters) between 1 January 2015 and 31 December of the year *N-1* (until the year in which the target deployment rate is reached and 2 years after the year when the deployment theoretically ends, i.e. 2023).

2.2. Incentive-based regulation of deployment time

The CRE has implemented an incentive-based regulation mechanism to ensure compliance with the forecasted timetable for the mass deployment. It focusses on the number of meters that are installed and able to communicate, compared to the forecasted deployment timetable. Monitoring takes place regularly throughout deployment. If the forecasted deployment percentages are not achieved, this generates penalties based on the following rules:

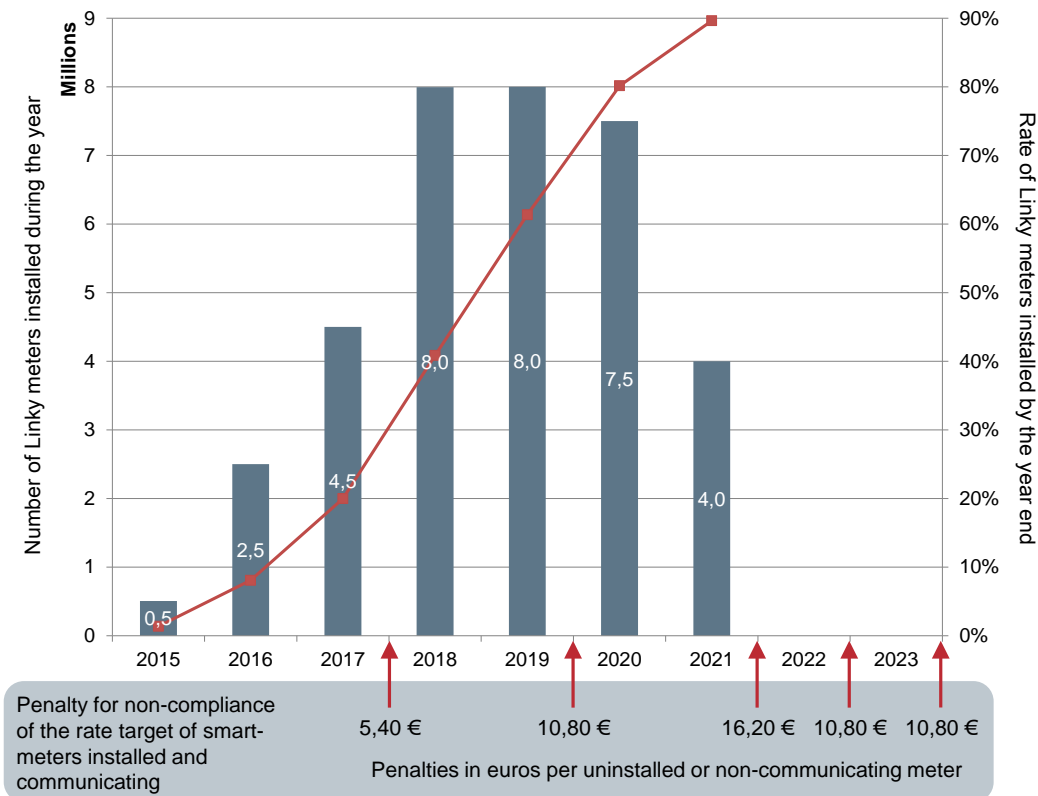
- monitoring takes place regularly from the start of deployment until the target deployment percentage is reached (a maximum of two years after the theoretical end of deployment). It checks whether the forecasted deployment percentages have been achieved on the following dates:
 - every two years (i.e. on 31 December of 2017, 2019 and 2021); then
 - every year if the target deployment rate is not reached by 31 December 2021 (i.e. on 31 December 2022, or even 31 December 2023);
- on these dates, the percentage of communicating *Linky* meters² is compared to the forecasted percentage of communicating *Linky* meters. The difference between the two percentages is applied to the total number of meters on the same date in order to determine the number of *Linky* meters that have either not been installed or are not communicating;
- the penalty borne by ERDF is then equal to the product of the number of meters not installed or not communicating and the unit penalty charge;
- a delay at the start of deployment is penalized less severely than a delay at the end, to allow for the operator's learning curve. The unit penalty changes are as follows:

Comparison date for actual and forecasted deployment percentages	Unit penalty charge (in € per uninstalled or non-communicating meter)
31 December 2017	5.40
31 December 2019	10.80
31 December 2021	16.20
If necessary, 31 December 2022, or even 2023	10.80

- penalties are accounted for in the income and expenditure adjustment account (*CRCP*) and cleared during the annual tariff revision.

The incentive-based regulation mechanism is illustrated below:

² Ratio between the number of *Linky* meters identified as communicating in *Ginko* and the number of low-voltage connection points ≤ 36 kVA fitted with a meter (electromechanical, standard electronic or *Linky*) that are active or have been inactive for less than six months.



The table below shows the target percentages used by the CRE for installed and communicating Linky meters. The forecasted percentages of installed *Linky* meters are also shown for information:

	2017	2019	2021
Forecasted percentages of installed <i>Linky</i> meters on 31 December in the year	20.0%	61.4%	90.0%
Target percentage of installed and communicating <i>Linky</i> meters on 31 December in the year	11.3%	46.0%	84.5%

If relevant, the target percentage of installed and communicating *Linky* meters on 31 December 2022 and 2023 is 84.5%.

In order to ensure that complying with the deployment timetable does not jeopardize the quality of the installation, the CRE has put in place a financial incentive relating to the percentage of return visits after a *Linky* meter is installed during the deployment.

It will also monitor the following indicators:

- the percentage of complaints related to deployment;
- the number of complaints related to deployment;

The indicators and the related objectives and financial incentives are defined in an Appendix (see Section D.1).

2.3. Review at the theoretical end of deployment

The CRE will carry out a review at the theoretical end of large-scale deployment (i.e. on 31 December 2021). Thus ERDF's penalties will be reduced if it makes up cost or timetable drifts relating to the early years of deployment. Conversely, if ERDF's performance deteriorates over the deployment period, it will be more heavily penalized;

The review works on the following principles:

- during the theoretical deployment phase, incentives relating to costs and time scales are calculated as planned, accounted for in the CRCP and cleared during the annual tariff revision;
- at the theoretical end of deployment, the cost and timetable incentives for the entire theoretical deployment period are recalculated based on the performance attained on 31 December 2021. The difference³ between the incentives calculated using the tariff and those resulting from this calculation is accounted for in the CRCP and cleared during the annual tariff revision.

2.4. Capping incentives of investment costs and deployment time

The CRE has capped the amount of penalties on investment costs and compliance with the deployment timetable.

It specifies that the total amount of these penalties may not exceed 400 basis points of remuneration.

This means that the remuneration for the project (remuneration at the basic rate, the bonus of 200 basis points and the incentives for investment costs and deployment timetable) may not be less than the basic rate reduced by 200 basis points.

3. Incentive-based regulation of the *Linky* metering system's performance

The quality of service for the *Linky* metering system is a key element not only in improving the functioning of the electricity market but also in realizing benefits in terms of technical intervention (estimated at €1.0 billion₂₀₁₄ at current value) and meter reading (estimated at €0.7 billion₂₀₁₄ at current value). These benefits are directly proportional to the performance level of the metering system. Poor performance would thus have a significant impact on the economic value of the *Linky* project.

In this context, the incentive-based regulation mechanism defined by the CRE aims to induce ERDF to reach the performance level necessary to obtain these benefits and improve the functioning of the electricity market, to the benefit of consumers.

The CRE thus gives ERDF a bonus of 100 basis points to induce it to maintain a performance level for the metering system that meets expectations over the long term. Conversely, any shortcoming in performance will reduce this bonus.

The bonus applies to assets employed as part of the *Linky* project between January 1st, 2015 and December 31st, 2021 (including information systems and assets relating to the pre-generalization phase), excluding assets used for the experimental pilots and standard electronic meters. The bonus is awarded throughout the asset life time. In order to prevent ERDF from receiving the bonus for any excess investment costs, it will apply to the net value of the reference investment costs on January 1st in the year, based on the forecasted costs discussed in Section A.2.1.

If the expected performance rates are not reached, the resulting penalties are calculated as defined in an Appendix (see Section D.2). The indicators prompting penalties are the following:

- percentage of successful remote meter readings by day;
- percentage of actual monthly readings published by *Ginko*⁴;
- percentage availability of customer internet portal;
- percentage of *Linky* meters with no remotely-read figures for the last two months;
- percentage of remote services carried out on the day suppliers requested them;
- percentage of meters activated within the defined time following an order for Mobile Peak.

³ Apart from the loss of the remuneration bonus on excess investment costs.

⁴ Invoicing and relationship-management system for network users.

The CRE considers it necessary that ERDF and other market players should be fully aware of the expected performance level during deployment. The CRE is therefore defining the objectives and financial incentives over the first four years of large-scale deployment (i.e. for the period between 2016 and 2019).

In addition, in order to take into account the learning curve, the objectives and financial incentives are strengthened over those four years.

After 2019, the CRE may adjust the mechanism based on its experience during the period 2016 - 2019.

The incentive-based regulation encouraging service quality will continue after the end of the deployment phase, so that the quality of the service delivered by the smart-meters will be maintained or even improved over time.

The indicators designed to monitor quality of service, with the related objectives and financial incentives, are defined in an Appendix (see Section D.2).

4. Overall incentive cap

The CRE has capped the overall amount of penalties on investment costs, compliance with the deployment timetable, and the performance of the metering system.

Thus the total penalty amount may never cause the overall project remuneration to fall below the basic rate reduced by 200 basis points.

B. An incentive-based tariff framework

This Section, relating to the incentive-based tariff framework, defines how costs relating to ERDF's smart metering system will be taken into account in the TURPE. A particular feature of the tariff structure is its incentive-based mechanism for remunerating capital charges, which is intended to encourage ERDF to optimize both the quantity and the cost of debt.

1. Methodology for determining the forecasted tariff income

1.1. General principles

ERDF's forecasted tariff income comprises capital charges and net operating expenses, plus the effect of the adjustment accounts.

Until now, and for ERDF, the only adjustment account has been the income and expenditure adjustment account (*CRCP*) provided in Section D.2 of the Decision of 12 December 2013 concerning decision on the tariffs for the use of a public electricity grid in the HVA or LV voltage range. As part of the smoothing mechanism provided in Section B.3, the CRE is setting up a new adjustment account, called the smoothing adjustment account (*Compte Régulé de Lissage - CRL*).

ERDF's forecasted tariff income is thus determined as follows:

$$RT_p = CNE_p + CC_p + A + CRL$$

Where:

- RT_p = Forecasted tariff income for the relevant tariff period;
- CNE_p = Forecasted net operating expenses for the relevant tariff period;
- CC_p = Forecasted capital charges for the relevant tariff period;
- A = The balance on the CRCP cleared at the end of the preceding tariff period;
- CRL = Charges posted to the CRL (negative amount) or posted out of the CRL (positive amount).

The forecasted capital charges have three components:

- capital charges relating to assets commissioned in the *Linky* project between 1 January 2015 and 31 December 2021 (excluding assets used for the experimental pilots and standard electronic meters) calculated following the method described in Section B.2.1;

- capital charges relating to other assets, determined using the method defined by the current tariffs;
- accelerated depreciation charges linked to the planned removal of the existing meters.

1.2. Application in the context of TURPE 4 HVA/LV

As stated in the Decision of 12 December 2013 concerning decision on the tariffs for the use of a public electricity grid in the HVA or LV voltage range (termed "TURPE 4 HVA/LV"), the charges taken into account when preparing the TURPE 4 HVA/LV did not include the forecasted impact of the *Linky* project on ERDF's forecasted tariff income.

Since the charges posted to the CRL over the planned period when the TURPE 4 HVA/LV applies (2014-2017) correspond exactly to the *Linky* project's forecasted impact on ERDF's forecasted tariff income, this income remains the same as that defined in the Decision of 12 December 2013.

2. Method for determining capital charges

The assets commissioned in the *Linky* project between 1 January 2015 and 31 December 2021 (including information systems), apart from assets used for the experimental pilots and standard electronic meters, have a special tariff treatment and thus their capital charges are calculated separately.

Capital charges for other assets are calculated using the method as described in the tariffs in force (currently the TURPE 4 HVA/LV).

In addition, bringing forward the replacement of the existing meters by *Linky* meters during the deployment phase will accelerate the depreciation charge to be covered by the tariffs.

Lastly, the CRE stresses that the Decision on 12 December 2013 provides that all capital charges be included within the CRCP.

2.1. Assets employed in the *Linky* project between 1 January 2015 and 31 December 2021⁵

a. Incentive-based method for determining capital charges

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

The remuneration method used for TURPE 4 HVA/LV does not induce ERDF to optimize the quantity/cost-of-debt ratio, because any gain related to such optimization is immediately clawed back. It could result in higher financing costs and a loss for the community. In fact, apart from taking into account the concession liabilities, this method has the special feature of basing ERDF's remuneration on an actual quantity and an actual cost of debt. Financing expenses are covered as they appear in ERDF's books.

The absence of incentive is not really a difficulty for investments other than those associated with the *Linky* project, since ERDF is not planning to take out loans during the current tariff period to finance such investments. In addition, because of the size of its balance sheet and the high proportion (around 90%) of concession liabilities, ERDF has only limited scope to optimize its liability structure within a tariff period.

In the case of the *Linky* project, the absence of incentive is more problematic, since ERDF plans to borrow to finance the project. Thus for this project, the potential for optimizing the quantity/cost-of-debt ratio is more significant.

To respond to this situation, the CRE has selected a remuneration method that gives ERDF an incentive to optimize the quantity/cost-of-debt ratio: it allows the network operator to keep any gains it derives from the optimization. In return, ERDF will bear the impact of any poor performance, for instance if the actual cost of the debt is higher than the target cost used by the CRE.

⁵ Apart from assets employed in the experimental pilots and standard electronic meters brought into use during the deployment phase.

To ensure this, the remuneration method adopted by the CRE uses a quantity and a cost for the target debt in order to calculate a rate of return to apply to the RAB for the *Linky* project. The RAB for the *Linky* project is the net book value at 1 January in the year of the assets employed in the *Linky* project during the period 1 January 2015 to 31 December 2021 (including IS and assets relating to the pre-generalization phase but excluding assets employed in the experimental pilots and standard electronic meters). This remuneration method applies throughout the asset life time.

The CRE is adopting a nominal pre-tax rate of return of 7.25%. In order to determine this rate, the CRE re-considered the various parameters used to calculate the weighted average cost of capital (WACC) and the resulting value ranges, based on:

- the study commissioned from an external consultant on the WACC for electricity and natural-gas infrastructures. The study was carried out during the summer of 2011. The values it recommended for beta and market premium (calculated using a very long-term approach) are 0.30 - 0.45 and 3.8% - 5.2% respectively for electricity distribution;
- the regular internal work to evaluate the WACC parameters;
- special features of the electricity-distribution activity and the *Linky* project, characterized by a financing period spread over six years and an asset lifetime of twenty years.

In order to define the ranges of values to use for the risk-free rate, the CRE referred in particular to the yield from long-term French sovereign bonds.

The CRE has adopted a prescriptive approach to the corporation-tax rate. The rate used in the WACC calculation is thus a reference rate of 34.43%.

The calculations used by the CRE for each of these parameters are shown in the table below:

Nominal risk-free rate	4%
Debt spread	0.6%
Market premium	5%
Asset beta	0.33
Equity beta	0.66
Gearing (debt/(debt + equity))	60%
Corporate tax rate	34.43%
Cost of debt*	4.6%
Cost of equity*	11.2%
Weighted average cost of capital*	7.25%

*Nominal before tax

In addition to the remuneration, the capital charges include the net contributions to depreciation relating to the RAB for the *Linky* project.

b. Concession liabilities and net contributions to provisions for renewals

All the concession liabilities (accounts specific to concessions and provisions for renewals) relating to assets for the *Linky* project, together with net contributions to provisions for renewals are treated using the methods defined in the current tariffs.

Thus as regards the TURPE 4 HVA/LV, concession liabilities related to the *Linky* project are deducted from regulated equity (see Section B.2.2.b); and the tariffs cover the net contributions to provisions for renewals.

2.2. Other assets

a. Principles

Capital charges related to other assets are determined using the method defined by the current tariffs. These assets include:

- assets unrelated to the *Linky* project;
 - assets commissioned in the *Linky* project up to 31 December 2014 and from 1 January 2022 (including those relating to experimental pilots);
 - assets commissioned in the experimental pilots between 1 January 2015 and 31 December 2021;
 - electro-mechanical and standard electronic meters (including those commissioned from 1 January 2014).
- b. Special case of the method used in the context of TURPE 4 HVA/LV

For the assets listed in the previous Section, the margin on assets applies to the RAB on 1 January in the year.

The financing expenses related to these assets are determined as follows:

- by convention, the debt contracted by ERDF is assigned to *Linky*-project financing, up to the debt ratio used to calculate the rate of return (see Section B.2.1.a);
- the financing expenses, if any, relating to the portion of the debt exceeding the debt ratio cited above are determined based on the recorded average cost of ERDF's debt.

Regulated equity is defined as the difference between the RAB for assets defined in the previous Section and the sum of the accounts specifically for concessions, renewal provisions, investment subsidies and, if applicable, the portion of the debt exceeding the debt ratio used to calculate the rate of return.

2.3. Tariff treatment of the early removal of existing meters

Bringing forward the replacement of the existing meters by *Linky* meters during the deployment phase will entail costs, as the existing meters will not all be fully depreciated when they are replaced. ERDF's planned accounting treatment uses an accelerated depreciation method that changes the existing meters' residual depreciable life. The capital charges include these costs as well.

3. Smoothing adjustment account

The CRE stated in connection with the TURPE 4 HVA/LV, that it "*would look favourably on a request for a special regulatory framework, covering the costs over an extended period coinciding with the period during which the project's expected benefits were realized*".

Such a request would address the wishes of the public authorities and some stakeholders.

As indicated in the public consultation on 30 April 2014, the CRE's update of the technical and economic study showed that the project has a slightly positive economic net present value for the distribution activity, and would generate benefits related to demand response (*Maîtrise de la Demande d'Énergie - MDE*) amounting to €2 billion. The request thus means that the tariff would bear the impact of the *Linky* project only when most users have a *Linky* meter and can therefore use the associated services.

To achieve this, the CRE is implementing a mechanism deferring until the theoretical end of large-scale deployment the effects of the *Linky* project on operating expenses and capital charges (depreciation and return on invested capital). During the postponement period, the impact is accounted for into a smoothing adjustment account (CRL). The amounts posted to the CRL for each year until 2021 are defined in the table below. They are defined *ex ante* based on a business plan communicated by ERDF, and neutralize the forecasted impact of the *Linky* project on ERDF's operating expenses and capital charges from 2014 to 2021. There will be a transition in 2022, when accounting the entire impact of the *Linky* project into the CRL stops and clearing the CRL starts.

In current €M	2014	2015	2016	2017	2018	2019	2020	2021	2022
Amount posted	108	130	170	201	275	304	293	228	7

From 2023, the CRL is gradually reduced each year by adjusting the tariff. This continues until it is completely cleared.

In order to ensure that the mechanism is financially neutral, the CRL is remunerated at the cost of debt adopted by the CRE to calculate the basic rate of return (see Section B.2.1.a).

Based on this rate, the amounts cleared from the CRL each year are defined in the table below. They have been calculated based on a clearance plan sent by ERDF to the CRE. They enable the CRL to be cleared completely by the end of 2030.

In current €M	2023	2024	2025	2026	2027	2028	2029	2030
Amount cleared	165	291	375	418	418	374	292	168

The table below shows the balance on the CRL on 1 January and on 31 December of each year, resulting from the amounts posted to and cleared from it.

In current €M	2014	2015	2016	2017	2018	2019	2020	2021	2022
Balance on 1 January	0	108	243	424	645	950	1,297	1,650	1,954
Remuneration	0	5	11	20	30	44	60	76	90
Amount posted (+) or cleared (-)	108	130	170	201	275	304	293	228	7
Balance on 31 December	108	243	424	645	950	1,297	1,650	1,954	2,051

In current €M	2023	2024	2025	2026	2027	2028	2029	2030
Balance on 1 January	2,051	1,980	1,780	1,486	1,137	771	433	161
Return	94	91	82	68	52	35	20	7
Amount posted (+) or cleared (-)	-165	-291	-375	-418	-418	-374	-292	-168
Balance on 31 December	1,980	1,780	1,486	1,137	771	433	161	0

As stated in the Decision of 12 December 2013, the TURPE 4 HVA/LV does not take into account charges related to the *Linky* project. In particular, the CRCP thresholds related to capital charges, the cost losses and the net book value of decommissioned fixed assets (shown in Section D.2.3 of the Decision of 12 December 2013) do not take into account the forecasted impact of the *Linky* project. By definition, the charges incurred will take this impact into account, and it will also be reflected in the CRL postings. In order to neutralize this double coverage (via the CRCP and via CRL postings) the incurred charges included in calculating the CRCP balance during the period 2014 - 2017 will be reduced by the amounts below:

In current €M	2014	2015	2016	2017
Capital charges	57.5	68.7	94.1	144.6
Purchase of losses	0.0	-1.1	-7.4	-24.4
Net book value of decommissioned fixed assets	0.0	0.0	0.7	3.3
Total	57.5	67.6	87.4	123.5

C. Revision clause

The CRE is including a revision clause to enable a review of the consequences of any factors external to ERDF that affect significantly the project's economic balance or deployment timetable.

The consequences of such external factors are taken into account only for the period after the revision clause has been activated.

The revision clause may be activated from the time this Decision comes into force, either at ERDF's request or on the initiative of the CRE.

D. Appendices

1. Quality of installation

1.1. Indicator linked to a financial incentive

The percentage of repeat visits following the installation of a *Linky* meter during deployment

Calculation	Numerator: accumulated number of repeat visits since the start of deployment or the last settlement Denominator: number of <i>Linky</i> meters installed since the start of deployment or the last settlement Calculation frequency: every year Settlements take place on 1 January 2018 and on each subsequent 1 January
Scope	All users who have had a <i>Linky</i> meter installed
Implementation date	Start of deployment
Objectives	For 2016: - Base objective: 1.2% over each year - Target objective: 0.8% over each year For 2017: - Base objective: 1.2% over each year - Target objective: 0.8% over each year For 2018 - 2021: - Base objective: 1% over each year - Target objective: 0.8% over each year
Incentives	When calculating the incentives, the percentages are rounded to the nearest one tenth of a percentage point For 2016 - 2021: - Penalties: €500k per point above the base objective - Bonus: €500k if the percentage is less than or equal to the target objective Posting: to the CRCP

1.2. Monitoring indicators

a. Percentage of complaints related to deployment

Calculation	Numerator: accumulated number of complaints related to the deployment of <i>Linky</i> meters (e.g. appointments not kept or water heater not connected) opened since the start of deployment or the last settlement Denominator: number of <i>Linky</i> meters installed since the start of deployment or the last settlement Calculation frequency: every month Settlements take place on 1 January 2018 and on each subsequent 1 January
Scope	All users who have had a <i>Linky</i> meter installed or for whom the installation is planned
Implementation date	Start of deployment

b. Number of complaints related to deployment

Calculation	Number of complaints related to the deployment of <i>Linky</i> meters (e.g. appointments not kept or water heater not connected) opened during the month Calculation frequency: every month
Scope	All users who have had a <i>Linky</i> meter installed or for whom the installation is planned
Implementation	Start of deployment

date	
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2. Performance of the *Linky* metering system

2.1. Indicators linked to financial incentives

a. Percentage of successful remote meter readings over the day

Calculation	Numerator: number of successful remote meter readings on a particular day Denominator: number of <i>Linky</i> meters identified as communicating in <i>Ginko</i> Calculation frequency: every month ⁶
Scope	<i>Linky</i> meters identified as communicating in <i>Ginko</i> Excluding days when the IS version is being upgraded
Implementation date	1 January 2016
Objectives	For 2016: 93% over each half year For 2017: 93% over each month For 2018 - 2019: 95% over each month
Penalties	In calculating the incentives, the percentages are rounded to the nearest one tenth of a percentage point For 2016: €150k per half year and per point below the objective For 2017 - 2019: €50k per month and per point below the objective Posting: to the CRCP

b. Percentage of actual monthly readings published by *Ginko*

Calculation	Numerator: number of sets of actual readings ⁷ published each month by <i>Ginko</i> Denominator: number of sets of actual readings to be published each month by <i>Ginko</i> Calculation frequency: every month
Scope	<i>Linky</i> meters identified as communicating in <i>Ginko</i>
Implementation date	1 January 2016
Objectives	For 2016: 91% over each half year For 2017: 91% over each month For 2018 - 2019: 95% over each month
Penalties	In calculating the incentives, the percentages are rounded to the nearest one tenth of a percentage point For 2016: €150k per half year and per point below the objective For 2017 - 2019: €50k per month and per point below the objective Posting: to the CRCP

c. Percentage availability of customer internet portal

Calculation	Numerator: number of hours the customer internet portal is available during a particular week Denominator: number of hours the customer internet portal is scheduled to be open during that week Calculation frequency: every week
Scope	Excluding scheduled unavailability and exceptional events

⁶ Monthly average of daily percentages.

⁷ The current market rules provide that a reading is said to be "actual" if the meter is read remotely up to five days beforehand.

Implementation date	1 January 2016
Objectives	For 2016: 97% over each half year For 2017: 97% over each week For 2018 - 2019: 98% over each week
Penalties	In calculating the incentives, the percentages are rounded to the nearest one tenth of a percentage point For 2016: €300k for each half year if the percentage ⁸ is strictly below the objective For 2017 - 2019: €25k for each week the percentage is strictly below the objective Posting: to the CRCP

d. Percentage of *Linky* meters with no remotely-read figures for the last two months

Calculation	Numerator: number of communicating <i>Linky</i> meters with no remotely-read figures for the last two months ⁹ Denominator: number of <i>Linky</i> meters identified as communicating in <i>Ginko</i> Calculation frequency: every month ¹⁰
Scope	<i>Linky</i> meters identified as communicating in <i>Ginko</i>
Implementation date	1 January 2016
Objectives	For 2016: 3% over each month For 2017: 2% over each month For 2018 - 2019: 1.5% over each month
Penalties	In calculating the incentives, the percentages are rounded to the nearest one tenth of a percentage point For 2016 - 2019: €50k per month and per point above the objective Posting: to the CRCP

e. Percentage of remote services carried out on the day suppliers requested them

Calculation	Numerator: number of remote services carried out on the day suppliers requested them Denominator: number of remote services requested by suppliers for those days Calculation frequency: every month
Scope	<i>Linky</i> meters identified as communicating in <i>Ginko</i>
Implementation date	1 January 2016
Objectives	For 2016: 92% over each half year For 2017: 92% over each month For 2018 - 2019: 94% over each month
Penalties	In calculating the incentives, the percentages are rounded to the nearest one tenth of a percentage point For 2016: €150k per half year and per point below the objective For 2017 - 2019: €50k per month and per point below the objective Posting: to the CRCP

⁸ Average of the percentages for weeks 1 - 26 for the 1st half year; and the average of the percentages for weeks 27 - 52 for the 2nd half year.

⁹ Period defined in the market rules in force at the time the indicator is calculated.

¹⁰ Monthly average of daily percentages.

f. Percentage of meters activated within the defined time following an order for Mobile Peak

Calculation	Numerator: number of <i>Linky</i> meters activated within the defined time ¹¹ following an order for Mobile Peak Denominator: number of <i>Linky</i> meters to be activated following an order for Mobile Peak Calculation frequency: every year
Scope	<i>Linky</i> meters identified as communicating in <i>Ginko</i>
Implementation date	1 January 2016
Objectives	For 2016 - 2017: 93% over each year For 2018 - 2019: 95% over each year
Penalties	In calculating the incentives, the percentages are rounded to the nearest one tenth of a percentage point For 2016: €250k per point below the objective For 2017 - 2019: €500k per point below the objective Posting: to the CRCP

2.2. Monitoring indicators

a. Number of LV connection points \leq 36 kVA fitted with a meter

Calculation	Number of connection points (either active or inactive for less than six months) fitted with a meter (electro-mechanical, standard electronic or <i>Linky</i>) Calculation frequency: every month
Scope	LV connection points \leq 36 kVA
Implementation date	1 January 2016

b. Number of connection points fitted with a *Linky* meter

Calculation	Number of connection points fitted with a <i>Linky</i> meter Calculation frequency: every month
Scope	LV connection points \leq 36 kVA
Implementation date	1 January 2016

c. Number of *Linky* meters identified as communicating in *Ginko*

Calculation	Number of <i>Linky</i> meters identified as communicating in <i>Ginko</i> Calculation frequency: every month
Scope	LV connection points \leq 36 kVA
Implementation date	1 January 2016

d. Average interval between installing a meter and listing it in *Ginko*

Calculation	Numerator: sum of the periods (in days) between installing <i>Linky</i> meters and listing them in <i>Ginko</i> Denominator: number of <i>Linky</i> meters identified as communicating in <i>Ginko</i> Calculation frequency: every month
Scope	<i>Linky</i> meters identified as communicating in <i>Ginko</i>

¹¹ The time defined in the current market rules is 8 hours.

Implementation date	1 January 2016
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e. Daily transmission rate of consumption data to suppliers

Calculation	Numerator: number of sets of consumption data (readings or graph of measurements) published by <i>Ginko</i> during the month Denominator: number of sets of consumption data to be published during the month Calculation frequency: every month
Scope	<i>Linky</i> meters identified as communicating in <i>Ginko</i>
Implementation date	1 January 2016

f. Percentage of meters with no remotely-taken readings by time interval

Calculation	Numerator: number of <i>Linky</i> meters with no remotely-taken readings for a period of: - less than one month - between 1 and 2 months, 2 and 3 months, 3 and 4 months, 4 and 5 months, 5 and 6 months - more than 6 months Denominator: number of <i>Linky</i> meters identified as communicating in <i>Ginko</i> Calculation frequency: every month
Scope	<i>Linky</i> meters identified as communicating in <i>Ginko</i>
Implementation date	1 January 2016

g. Percentage of estimated readings for termination requests

Calculation	Numerator: number of estimated readings for termination requests Denominator: number of termination requests Calculation frequency: every month
Scope	<i>Linky</i> meters identified as communicating in <i>Ginko</i>
Implementation date	1 January 2016

3. Forecasted trends in full costs and IS costs (confidential Appendix)

This Appendix is confidential.

Under Article L. 341-3 of the French Energy Code, this Decision will be published in the Official Journal (*Journal Officiel*) of the French Republic.

Signed in Paris, 17 July 2014

For the French Energy Regulatory Commission,
Chairman,

Philippe de Ladoucette