

DELIBERATION

Deliberation of the French Energy Regulatory Commission of 2 February 2017 forming a decision regarding the interconnector "IFA2" project

Present: Philippe de LADOUCETTE, Chairman, Christine CHAUVET, Catherine EDWIGE, Hélène GASSIN, and Jean-Pierre SOTURA, commissioners.

1. CONTEXT AND LEGAL FRAMEWORK

1.1 The interconnector IFA2 project

The "IFA2" interconnector project between France and Great Britain aims at increasing the cross-border interconnection capacity between France and the United Kingdom (UK). This project was granted the status of Project of Common Interest (PCI) both in October 2013 and in November 2015. It consists in building a 1 000 MW power line between the substations of TOURBE (near Caen, Calvados, France) and CHILLING (near Southampton, Hampshire, UK) adding up to the existing 2000 MW cross-border interconnection capacity in service between France and Great Britain (interconnector "IFA 2000"). Its commissioning is scheduled for the end of 2020.

RTE develops the IFA2 project in partnership with *NG IFA2 Ltd*, a sub-subsidiary of the British transmission network operator *National Grid Electricity Transmission plc*. An incorporated joint venture, equally owned by RTE and NG IFA2 Ltd, will perform the IFA2 interconnector's construction work. Its operation will be managed by an unincorporated joint venture between RTE and NG IFA2 Ltd.

1.2 Legal framework

In its deliberation of 1st December 2016 approving RTE's investment programme for 2017, the CRE approved the expenses relating to the IFA2 project for the year 2017 but considered it premature to approve the IFA2 project as a whole before the conduct of a public consultation. It specified that the approval of the IFA2 project would be the subject of a specific decision in January 2017.

Furthermore, according to the provisions of Articles L. 341-2 and L. 341-3 of the French Energy Code, the CRE has authority to set the methods to be used for establishing the public distribution and transmission networks' access tariffs (the "Tarif d'Utilisation des Réseaux Publics d'Electricité" or TURPE). These tariffs are calculated so as to cover all the costs borne by RTE, "insofar as such costs correspond to those of an efficient transmission system operator".

Article L. 341-3 specifies that the CRE decides on "the evolution of public electricity distribution and transmission networks' access fees" and can provide for "a multi-annual tariff review framework and appropriate incentive measures, both on the short and the long-run, in order to encourage distribution and transmission network operators to improve their performances, in particular regarding the quality of electricity, the integration within the domestic electricity market and the security of supply, and to find ways to improve productivity."

The CRE's deliberation of 17 November 2016 on the decision relating to the public electricity networks' access tariff in the high-voltage (HTB) range, the so-called TURPE 5 HTB¹, built on the main incentive regulation principles applicable to the electric interconnector projects for the period of the previous tariff (TURPE 4²), but introduced some changes.

¹ http://www.cre.fr/documents/deliberations/decision/turpe-htb3

² <u>http://www.cre.fr/documents/deliberations/decision/turpe-4-htb</u>

1.3 Subject of the decision

The subject of the present decision is to approve the interconnector "IFA2" project and to define the incentive regulation regime applicable to this project.

The Higher Energy Council, consulted by the CRE about the decision project, gave a positive opinion on 31 January 2017.

1.4 Schedule

In a letter dated 25th April 2016, RTE submitted to the CRE an application to be granted an investment incentive for the interconnector "IFA2" project between France and Great Britain. The application was filed under the explicit assumption that the United Kingdom (UK) would remain a member of the European Union (EU).

On 23rd June 2016, British citizens chose by referendum to leave the EU. On 7th October 2016, the CRE asked RTE to update their application, taking into account this new context of uncertainty regarding the future framework for the relationship between France and Great Britain. Additional elements were sent to the CRE by RTE on 23rd November 2016.

On the basis of these elements, the CRE launched at the beginning of December 2016 a public consultation relating to the project IFA2³. This public consultation ended on 3rd January 2017. Ten stakeholders responded: 4 developers of interconnector projects between France and the UK (RTE, NGIH, FAB Link, and Elan Energy), 2 utilities (EDF and Engie), one association (UFE), one consultant, and 2 private individuals. The non-confidential parts of these responses are available on the CRE's website together with the present deliberation.

The present deliberation takes into consideration the responses from the market stakeholders during this public consultation.

2. ANALYSIS OF ECONOMIC BENEFITS OF THE PROJECT

The approval of the project and the setting up of the incentive regulation mechanism depend on the estimated costs and benefits of the project, which will then be compared to their realized values.

2.1 Analysis of gross benefits at the European level

2.1.1 Assumptions and calculation method

The incentive regulation mechanism is based on an assessment of the economic utility of the "IFA2" project.

The CRE considers that the method for calculating the gross economic utility of the project used in the TYNDP 2016⁴ can constitute a good reference for estimating the gross benefit from the project. This method provides economic utility estimates, based on simulations of the electric system at the scale of the European continent for 2020 and 2030. These are not, therefore, forecasts but assessments of the project's economic utility during the studies carried out by ENTSO-E. Several scenarios are studied for 2030, for the purpose of testing the robustness of the investment decision to contrasted offer-demand situations.

For its part, RTE estimated the gross economic utility of the project. The results are close, on average, to those of the TYNDP 2016. RTE's estimates are more recent than those of the TYNDP 2016, and are based on a larger number of climatic years than the TYNDP, while being consistent with the results of the TYNDP 2016.

Therefore, the CRE relies in the present deliberation on the gross benefit estimates provided by RTE. However, consistently with the TYNDP 2016, the CRE retains its own analysis of the future reference capacity existing at the border between France and Great Britain, as proposed in the public consultation and recalled below.

⁴ The European network of transmission system operators for electricity (ENTSO-E) develops every two years a *Ten-Year Network Development Plan* or TYNDP for the whole European Union. The most recent version of this plan is the TYNDP 2016: <u>http://tyndp.entsoe.eu/</u>



³ <u>http://www.cre.fr/en/documents/public-consultations/the-interconnector-ifa2-between-france-and-great-britain</u>

2.1.2 Reference cross-border capacity between France and the United Kingdom

The gross benefit from the project is sensitive to the cross-border capacity that would be available between France and Great Britain in the absence of the IFA2 project. The CRE proposed in its public consultation to set this reference capacity drawing on the expected cross-border capacities in 2020 and 2030 as described in the TYNDP 2016.

The stakeholders that responded to the public consultation are divided on this question. RTE would prefer a more conservative method⁵, which tends to increase the benefits from the project. Conversely, another stakeholder would like all the interconnector projects under study to be taken into account in the reference capacities, which tends to reduce the benefits from the project. Finally, one last stakeholder considers that the approach proposed by the CRE is relevant.

In the present deliberation, the CRE considers reference cross-border capacity values that are consistent with the TYNDP 2016 scenarios, that is to say:

- 3 GW capacity between France and Great Britain excluding IFA2 in 2020;
- 4.4 GW capacity between France and Great Britain excluding IFA2 in 2030.

2.1.3 Gross benefit values

In this deliberation, the CRE takes into account a unique value of the estimate of gross benefits from the project, determined as the average of the values calculated for 2020 and 2030, the latter being the average of the values obtained for the 4 ENTSO-E scenarios. This value does not purport to summarize all the scenarios studied and is not a forecast of the European electric system's future operation. Such a simplification is however necessary to approve the project and define the incentive regulation applicable.

The values approved by the CRE within the framework of the incentive regulation mechanism are summarized in the following table:

Year	Scenario	TYNDP 2016 estimate (M€ ₂₀₁₆ /year)	Gross benefits, values retained by the CRE for the incentive regulation mechanism (M€ ₂₀₁₆ /year)		
2020	EP	70 - 110	102		
2030	Vision 1	50 - 70	42	- 67	84
	Vision 2	90 - 110	83		
	Vision 3	70 - 110	78		
	Vision 4	70 – 90	65		

2.1.4 Capacity value of the IFA2 project

RTE considers that the gross benefits presented above do not take into account the whole interconnector value, in particular the possible benefits during periods of strong tension of the electric system. In their updated application of November 2016, RTE suggested to take into account a "capacity value" of 24 M€ per year for the IFA2 interconnector, representing savings in power plant investments that the interconnector would allow.

Taking such benefits into account would significantly improve the assessment of the project's interest.

The CRE considers however that the methodology and the costing proposed by RTE are insufficiently documented, so that it is impossible to assess the relevance of such gains. In addition, the non-served energy volume is nil in the four TYNDP 2016 scenarios, despite the fact that the demand is assumed to be inelastic. As a consequence, the CRE does not consider it relevant to take into account a capacity value for the IFA2 project. In the coming months, the CRE will continue its analyses on the more general issue of taking the capacity value into account when estimating the benefits of interconnector projects.

⁵ RTE would like the gross benefit to be calculated as the average of several capacity increments as explained in the public consultation of 1st December 2016.

2.2 Predicted costs of the project

2.2.1 Predicted investment expenses

The CRE sets the predicted investment costs (excluding return on capital assets under construction) to be borne by RTE, at 370 M \in_{2017} , i.e. the budget submitted by RTE.

This cost target was presented in the public consultation. The majority of stakeholders did not raise objections. One stakeholder wished to have a detailed description of the perimeter covered by these costs, and of their breakdown between the different components of the power line.

2.2.2 Operation and maintenance costs

The CRE sets provisional operating costs at 8.5 M€2016 per year.

As specified in the public consultation, this estimate includes the annualized cost of retrofitting the control centre and the HVDC valves. The majority of stakeholders who expressed their opinions on the method envisaged by the CRE for estimating operation and maintenance costs share CRE's analysis on the opportunity to take these renewal costs into account.

2.2.3 Costs of power losses

Given the absence of sufficient justifications regarding the methodology implemented by ENTSO-E to estimate the cost of the power losses generated on the national networks by the operation of IFA2, the CRE suggested in the public consultation to take into account only the losses on the sole IFA2 power line. The majority of stakeholders share the CRE's analysis. Only one stakeholder considers on the contrary that ENTSO-E's estimate of the losses for the whole European electric network should be used. Another stakeholder asks the CRE to obtain from each TSO concerned (RTE and NGIH) rigorous estimates of the losses caused by IFA2 operation for the national transmission networks.

The CRE maintains its analysis and takes into account the cost of losses on the sole power lines of the IFA2 project. In the future, it will ask the TSOs of the countries concerned by a new interconnector to provide an estimate of the losses generated on the national transmission networks.

Therefore, the CRE sets the predicted cost of losses at 4.8 M€₂₀₁₆ per year.

2.3 Analysis of the project's net benefit

As indicated in the public consultation, the analysis of the costs and gross benefits of the project shows that the project brings a positive net benefit of approximately 25 M€ per year at the European scale.

In their responses to the public consultation, the different project developers and EDF agree with CRE's analysis according to which the project brings a positive net benefit. Another stakeholder does not share this conclusion, and emphasizes the fragility of the underlying assumptions.

In addition, the breakdown of this net benefit between the different countries suggests that the United Kingdom will be the main beneficiary of the project, the benefit from the project being barely balanced for the European Union without the United Kingdom. Whereas the stakeholders, on the whole, do not contest the conclusion of this analysis, which is consistent with the geographic situation of the United Kingdom, interconnected to a highly meshed continental network, some consider however that the only relevant scope of analysis to study the interest of the project is that of the whole interconnected market.

2.4 Conclusions

The cost – benefit analysis for the IFA2 project shows that the project brings a positive net benefit at the perimeter of the European continent. Even if the United Kingdom receives the bulk of these benefits, the project is almost balanced for Europe without the United Kingdom.

Under these circumstances, the CRE approves the IFA2 project as set out in the investment programme submitted by RTE for 2017.

The actual realization of the gains from the IFA2 project requires, in addition to the relevance of the scenarios used in the above analysis, compliance with costs and construction schedules, as well as an efficient usage of the interconnector once operational.

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However, the result of the British referendum of 23rd June 2016 gives rise to many institutional and operational uncertainties, in particular regarding the future operation rules of the interconnector.

Under these circumstances, the CRE suggested, in the public consultation, to define an incentive regulation framework applicable to the IFA2 project in order to better share the risks related to the IFA2 project, between RTE and the users of the French transmission network. The CRE proposed three scenarios:

- a scenario A, applying the framework defined in the TURPE 5 HTB to the IFA2 project;
- two scenarios B and C, making RTE bear a greater share (30 % and 50 %, respectively) of the risks and benefits of the IFA2 project.

Generally, the different project developers consider that the economic fundamentals of the projects remain the same, whether the United Kingdom is in the European Union or not, and that the consequences of the Brexit on the project therefore remain very limited. Several stakeholders fear that rebalancing the way risks and benefits are shared to increase RTE's exposure to the realized benefit of the project would lead it to delay or even abandon the project. One stakeholder considers on the contrary that it is legitimate to strengthen the regulation framework in such circumstances.

The CRE maintains its analysis concerning the relatively low level of benefits created by the interconnector, in particular at the perimeter of Europe without the United Kingdom, and the significant uncertainties concerning the actual realization of these benefits in the context following the British referendum of 23rd June 2016. It considers that launching the project under the conditions fixed by the incentive regulation framework of the TURPE 5 HTB would expose the users of the French public transmission network to a too high level of risk.

Therefore, the CRE defines a specific incentive regulation framework, ensuring a more balanced sharing of risks and benefits between RTE and the network users. The retained mechanism corresponds to the scenario B described in the public consultation.

The final investment decision, within the regulation framework as defined in this deliberation for the IFA2 project, rests with RTE.

3. INCENTIVE REGULATION APPLICABLE TO THE IFA2 PROJECT

3.1 Mechanism architecture

The financial incentives aim on the one hand to share the risks and benefits of the project between RTE and the users, and on the other hand to encourage RTE to minimize the costs of the project.

The incentive regulation mechanism for the interconnector "IFA2" project includes the same components as those of the general framework defined in the TURPE 5 HTB tariff (only the level of risks' and benefits' sharing is changed):

- an incentive to develop interconnections that are useful for the community. The amount of this fixed bonus depends on the estimated utility of the project, as well as on the share of risks and benefits borne by RTE;
- an incentive to minimize the project's investment costs. The level of this incentive, positive or negative, depends on the realized costs of the project, according to the formula presented in this decision ;
- an incentive relating to the usage rate of the additional capacity between France and Great Britain brought by the IFA2 project. The level of this incentive, positive or negative, depends on the actual usage of the capacity, according to the method presented in this deliberation;
- a remuneration floor and cap, defined with reference to the realized gross value of the project, the weighted average cost of capital (WACC) and the rate of return on assets under construction.

The incentives mentioned above are paid only as from the commissioning of the interconnector.

Mechanism length

The length of the incentive regulation mechanism is ten years, as from the year of commissioning of the interconnector.

Considered economic utility

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Within the framework of the incentive regulation mechanism that applies to RTE, half of the project's economic utility is taken into consideration.

Indexation of prices

Under the application of the present deliberation, unless otherwise specified, the monetary values are expressed in euros 2016. They are indexed on the CPI index published by INSEE (identifier: 0001763852).

Floor

A floor is applied to the sum of the three bonuses paid. This floor is set at RTE's rate of return on assets under construction (AuC) as defined in the TURPE HTB tariff in force. For example, this rate of return is 3.7 % under the TURPE 5 HTB.

Cap

A cap is also applied to the sum of the three bonuses paid. This cap, which is the symmetric of the floor relative to RTE's WACC, as defined in the TURPE HTB tariff in force. For example, the applicable WACC under the TURPE 5 HTB is 6.125 %, which corresponds to a remuneration cap of 8.55 %.

Reference for calculating the remuneration

The floor and cap rates apply to the entire period of enforcement of the incentive regulation mechanism. The remuneration received by RTE is calculated with reference to the asset's net realized carrying amount, which enters its regulated asset base.

3.2 Incentive rate and fixed bonus

The incentive rate represents the fraction of the annual costs and gross benefits that are subject to incentives, within the limit of the remuneration floor and cap.

The higher this rate, the closer the return to RTE is to the net realized utility, i.e. the net benefits brought by the project to the community. The project's predicted net benefit being positive, the expected sum of the bonuses that will be received by RTE is positive.

Hence, whereas an increase in the incentive rate translates into an increase of the share of risks borne by RTE, it also translates into an increase of the fixed bonus, which corresponds to the expected remuneration that RTE will draw from the project.

For the IFA2 project, the incentive rate is set at 30 % and the fixed bonus at 2 M \in_{2016} per year.

3.3 Incentive to minimize investment costs

After the commissioning of the power line, RTE will receive a bonus: the lower the realized investment costs, the higher the bonus, and the higher the costs, the lower the bonus. The incentive relating to the costs is expressed in terms of the difference between the predicted costs and the realized costs.

Calculating the cost target

The CRE approves the budget submitted by RTE, i.e. 370 M€₂₀₁₇ for the share of the project's total investment costs to be borne by RTE.

This cost target breaks down into a chronicle of investments between 2016 and the end of 2020, the provisional date of commissioning of the interconnector. At the commissioning date, this chronicle will be converted into a value of investment costs taking into account the return on assets under construction $(AuC)^6$.

Calculating the realized costs

⁶ The rate of return on AuC for the TURPE 5 HTB period being 3.7 %, the indicative cost target is hence at this stage of 409 M€₂₀₂₀ with an assumed inflation of 2 % per year. At the date of commissioning, this target will be adjusted to take into account the realized inflation and the current rates of return on AuC.

Similarly, the chronicle of realized investment costs will be calculated at the date of actual commissioning. This target will take into account the gross amount of investment and the return on AuC.

Calculating the costs variable bonus

Once the interconnector is commissioned, the difference between the cost target and the costs actually realized will be calculated.

This difference, multiplied by the incentive rate of 30 %, will be converted into an equivalent annuity calculated over the lifetime of the incentive mechanism (ten years) by taking as discount rate the applicable WACC at the commissioning date.

3.4 Incentive relating to the usage rate

During the public consultation, the stakeholders were opposed to the use of a bonus relating to the interconnector's usage rate, but for opposite reasons.

Some stakeholders consider that a bonus calculated using the actual usage of the interconnector raises a risk to project developers, by creating a source of income or penalties determined by variables that they do not fully control. RTE asks that the incentive be related only to the interconnector availability rate, regardless of its actual usage. Conversely, several stakeholders admit that an incentive related to the realized economic interest of the interconnector is necessary to protect consumers from the risk of financing an unprofitable project. According to them, this incentive should relate to the income drawn from the interconnector, which is more representative of the socio-economic interest of the project than the flows observed, and is consistent with the environment faced by a private investor.

The CRE maintains its analysis which led it to retain the principle of an incentive relating to the usage of the interconnector under the TURPE 4 HTB and the TURPE 5 HTB.

Calculating the usage rate

After the power line's commissioning, RTE will receive each year a financial incentive proportional to the usage of the additional capacity brought by the "IFA2" project. The incentive relating to the usage rate is expressed in terms of the difference between the target usage rate and the realized usage rate. This incentive reflects the interconnector's actual usefulness for the community.

The formula used for calculating the usage rate of the additional capacity between France and Great Britain brought by the "IFA2" project is the following⁷:

$$\frac{100\%}{8760} \sum_{h=1}^{8760} \frac{\max(0, \text{ capacité utilisée}_{h,FR-GB} - \text{ capacité offerte}_{h,\text{sans IFA2}})}{\text{capacité offerte}_{\text{avec IFA2}} - \text{capacité offerte}_{\text{sans IFA2}}}$$

where:

- the capacity used during hour h between France and Great Britain corresponds to the absolute value of commercial cross-border flows between France and Great Britain;
- the capacity offered without IFA2 during hour h corresponds to the capacity that can be offered, without IFA2, in the direction of the commercial flow observed. In the event of network constraints limiting the total exchange capacity available at the border between France and Great Britain, and in the cases where this total available capacity is saturated, the capacity offered during hour h without IFA2 is equal to the product of:
 - the capacity that would have been offered in the direction in which the commercial flow is observed without IFA2 at this same time in the absence of network constraints and;
 - the ratio between the capacity used during hour h and the sum of the available nominal capacities of the interconnectors in service at this same time;
- the denominator (offered capacity with IFA2 minus offered capacity without IFA2) corresponds to the nominal value of the interconnector, i.e. 1000 MW, whatever are the conditions of use.

⁷ In leap years, the formula will be adapted accordingly.

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Target usage rate

Since the conduct of the public consultation, RTE provided to the CRE its estimate of the usage rate in 2030 for a capacity increment of 4.4 to 5.4 GW, i.e. 50 %. RTE still estimates the usage rate of an incremental capacity of 3 to 4 GW at 72% in 2020. This leads to an average target rate of 61 % over the whole period (equivalent to a target rate changing linearly from 72 % in 2020 to 50 % in 2030).

In addition, the CRE carried out its own analyses which lead to an average target rate of 65 %, drawing on the assumptions of the TYNDP 2016, like the simulations performed by RTE. The CRE sets the target rate as the average of the rates obtained with the two methods, i.e. 63 %.

Usage variable bonus

Each year, the variable bonus relating to the usage rate is calculated as follows:

PV_{usage} = 30 % x Unit value x (Usage rate_{ex post} – Usage rate_{ex ante})

This bonus is an approximation of the realised, and not estimated *ex ante*, gross benefits. It is thus implicitly assumed, as a first approximation, that the gross benefit created by the interconnector is proportional to its usage rate.

The unit value of a usage point is therefore defined as:

Unit value = (Gross Benefitex ante - Costs of power lossesex ante) / Usage Rateex ante

The values retained for the different terms of the expression above are (see above):

- a gross benefit of 42 M€2016 per year (half of the total gross benefit);
- a cost of losses of 4.8 M€2016 per year (half of the total cost of losses);
- a target usage rate of 63 %.

The CRE sets the unit value of the usage rate point at 0.59 M \in_{2016} .

3.5 Implementation of the mechanism

3.5.1 Payment of the bonuses

The financial incentive is managed through RTE's expense and income clawback account (CRCP) for a period of ten years after the interconnector has been commissioned.

The amount of annual bonuses or penalties will be smoothed in the event where the floor or the cap is activated. Hence, if the amount of the bonus (or penalty) calculated in year N is above the cap (or below the floor), the difference between the bonus calculated in the absence of cap (and floor) and the cap (or floor) is discounted and then added to or deducted from the sum of bonuses of year N+1. During the tenth year of the mechanism, any difference between the bonus calculated in the absence of floor/cap and the bonus calculated in the presence of floor/cap (by taking into account the possible carry-overs from previous years) is capped.

3.5.2 Data transmission

Data transmission for calculating the incentive to minimize costs

RTE transmits to CRE the chronicle of annual investment costs drawn up no later than 31st March of the year following the year of the IFA2 project commissioning.

Data transmission for calculating the incentive relating to the usage rate

Once the IFA2 interconnector is commissioned, RTE transmits to CRE, no later than 31st March of each year, from the year following the year of commissioning:

- the average of the capacity offered at the France Great Britain border in the previous year, calculated as if the IFA2 link was not there, as well as the details of possible capacity reductions due to unavailability of the other France Great Britain links or to upstream network constraints;
- the average of the capacity actually used at the France Great Britain border in the previous year.

4. CASE OF THE OTHER INTERCONNECTOR PROJECTS WITH GREAT BRITAIN

The CRE notes that there are several interconnector projects between France and Great Britain. Besides the IFA2 project:

- the ElecLink project obtained an exemption for 25 years⁸; the construction work could start by July 2017;
- the projects FAB Link (1.4 GW) and Aquind (2 GW) were made known to the French and English regulators, which could have to deal with these projects in the coming months;
- another project, GridLink (1.4 GW), is also being studied by a stakeholder.

If all these projects came into being, the interconnector capacity in 2030, between France and the United Kingdom, would be 8.8 GW, i.e. well above the target capacity of 5.4 GW indicated in the TYNDP 2016 at the same time horizon.

Furthermore, whereas the TYNDP 2016 assesses at 10 GW the optimal interconnector capacity between the United Kingdom and the whole European continent in 2030, the CRE notes that the implementation of all the projects of the TYNDP⁹ would lead to capacity of 20.8 GW.

In this context, when there is no visibility on the future operating conditions of these interconnectors following the British referendum, the CRE considers that the treatment of these projects is an issue of European importance. Therefore, the CRE intends to rapidly engage in in-depth exchanges with its counterparts with the aim of developing common or harmonized approaches to the analysis of these projects.

5. DECISION OF THE CRE

In addition to its deliberation of 1st December 2016 approving RTE's investment programme, the CRE approves the IFA2 project submitted by RTE.

The incentive regulation applicable to the IFA2 project will be that defined in paragraph 3 of the present deliberation, provided that RTE take their final investment decision before 31st December 2018.

This decision will be published in the Journal officiel de la République française.

Paris, 2 February 2017. For the Energy Regulatory Commission, The Chairman, Philippe de LADOUCETTE



⁸ http://www.cre.fr/documents/deliberations/decision/interconnexion-france-grande-bretagne2

⁹ In alphabetical order: ANAI, Aquind, Britib, ElecLink, FAB, GridLink, IFA2, NEMO, NorthConnect, NSN, Viking, 2nd interconnector between Belgium and the United Kingdom, 2nd interconnector between the Netherlands and the United Kingdom.