

Deliberation by the French Energy Regulatory Commission of 26 March 2015 approving Flow Based market coupling and the related capacity calculation method

Present: Philippe de LADOUCKETTE, Chairman, Christine CHAUVET, Catherine EDWIGE, Yann PADOVA and Jean-Pierre SOTURA, commissioners.

In application of Article 37(6) of Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and of Article 30 of the specifications relating to the concession for the public electricity transmission network approved by French Decree No 2006-1731 of 23 December 2006, the French Energy Regulatory Commission is responsible for approving the rules for calculating and allocating cross-border electricity exchanges.

On 4 March 2015, RTE addressed CRE for the approval of a proposal to change the rules for calculating and allocating the capacities for cross-border electricity exchanges. This proposal aims to implement a new market coupling methodology: Flow Based market coupling. It involves:

- a change in the applicable method for calculating capacity for day-ahead timeframe at the Belgian and German borders, as well as the subsequent adaptation of the rules for calculating capacity at the same borders for intraday timeframe and at the Swiss border for day-ahead timeframe;
- a change in the functioning of market coupling which, at the Belgian and German borders, is the method for allocating day-ahead capacity;
- and a change in the method for sharing the congestion income generated by allocation of capacity for daily timeframe.

Therefore, RTE submitted to CRE:

- a new version of the "methodology for calculating cross-border electricity exchange capacity by RTE at the French borders";
- a document summarising in French the main elements of the approval package¹ prepared by the project partners (transmission system operators and power exchanges) as well as its unabridged version in English.

¹ "Documentation of the CWE FB MC solution, as basis for approval-request" accessible on the CASC website: www.casc.eu/

1. Context and challenges of the implementation of Flow Based market coupling in the Central West Europe region

1.1. Regulatory context

The implementation of Flow Based market coupling falls within the framework of the provisions of Regulation 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity. This defines the general principles to be followed in order to ensure efficient congestion management.

Moreover, the Flow Based mechanism was described in the guidelines of the Agency for the Cooperation of Energy Regulators (ACER) on capacity allocation and congestion management² as the target model for the allocation and calculation of capacity for day-ahead and intraday timeframes. This target model was taken up in the regulation establishing a network code for capacity allocation and congestion management (CACM regulation) adopted in December 2014 by the European Commission, and which, subject to validation by the European Parliament, should enter into effect in summer 2015. The CACM regulation provides for system operators to submit a proposal to define capacity calculation regions three months following the entry into effect of the regulation, and for the concerned system operators to submit a proposal for a methodology for Flow Based capacity calculation within 19 months at the latest after the entry into effect of the regulation.

The implementation of the Flow Based project in the Central West region³ is therefore an early implementation of the target model described in the CACM regulation.

1.2. Origin of work in the Central West Europe region

To improve the management of the European electricity system, regional initiatives have played and continue to play a major role. They have both enabled local improvement and fuelled European discussions on the definition of target models. This is particularly true of the work carried out in the Central West Europe region.

In this region, work on coordinated and optimised management of networks and generation units through spot electricity markets was initiated following the signing of the *Memorandum of Understanding*⁴ in June 2007 between governments, regulators, transmission system operators, power exchanges and representatives of the region's market participants. This memorandum reflects a strong determination to move forward in that direction.

Based on the pre-existing coupling between France, Belgium and the Netherlands, work conducted following that memorandum initially led to the creation of market coupling covering the entire region at the end of 2010. Since then, this coupling has been extended to 19 European countries and constitutes the capacity allocation method for day-ahead timeframe for five of the six French borders⁵. It enables efficient and optimised use of commercial capacity made available to the market by transmission system operators, and therefore optimises, under the limits constituted by these commercial capacities, the strategic plans of generation units at the level of the concerned countries, and in the long term, at European level.

Therefore, efforts mainly covered over these last few years the improvement of capacity allocation with the implementation of market coupling. The other parameter that can be controlled in order to draw the greatest benefit from infrastructure and, in particular, from existing interconnections, is the maximum allowable

² The document is available at the following address: www.acer.europa.eu/

³ The Central West region includes, in addition to France, Germany, Belgium, Luxembourg and the Netherlands. The initiatives in this region also cover Austria.

⁴ The document is available at the following address: www.benelux.int/

⁵ CRE's deliberation of 29 January 2015 has recently enabled implementation of day-ahead market coupling at the France-Italy border.

Switzerland, because it does not belong to the European Union and due to negotiations in progress with it, is a specific case.

cross-border exchange volume. The improvement of the methods for calculating maximum exchange capacity⁶ is therefore a fundamental step and the implementation of the Flow Based method specifically aims to achieve that.

1.3. Importance of optimised capacity calculation

In order to comply with the network security requirements, RTE must determine the maximum possible exchange values for the different French borders, so as to not generate overloading of a network element: it therefore determines the capacity domain.

The definition of this capacity domain must take account of the fact that a trade generates physical flows on all the network elements, and reciprocally, the fact that a given element in the network can be the support for physical flows generated by trades at different borders. Consequently, there is interdependency between the maximum allowable trades at several borders. This is all the more so the closer the borders are geographically.

Today, the transmission system operators are defining a fixed distribution of network margin use⁷ between these borders in order to manage this interdependency as simply as possible. RTE therefore applies equal margin distribution between the France- Belgium and France- Germany borders.

However, this approach creates major under-optimisation, since it does not enable, in cases in which margins reserved at a given time for a trade at one border are not used, the simultaneous increase of the trading possibilities at another border where they potentially have a high economic value.

Optimisation of the use of production facilities at European level which market coupling enables through the matching of bids and offers filed in order books of spot power exchanges can be done in a larger offered import / export domain using the Flow Based mechanism. In that regard, the coupling algorithm has an additional degree of freedom in being able to arbitrate between trades at one border or another.

Other than this optimisation challenge, capacity calculation must ensure network security by not enabling trades that could cause overload on a network element. The high level of coordination between system operators required by the implementation of Flow Based capacity calculation must enable more secure management of the European system by lowering uncertainty related to the impact caused by the management of a given network on that of another country. Therefore, Flow Based coupling should enable more efficient management of flows generated by trades between two countries on the network of a third country (transit flows), and to a certain extent, the flows generated by trades within a country on the network of a third country (loop-flows).

1.4. Development and testing of Flow Based market coupling

Work on the implementation of Flow Based coupling really started after the go-live of market coupling in the Central West region at the end of 2010, which only enabled optimisation of capacity allocation and not the calculation of maximum exchange capacity.

Following initial progress in the stabilisation of the methodology and promising internal simulations, a Flow Based parallel run has been conducted since the start of 2013 and is expected to continue until the effective go-live of Flow Based market coupling, the date of which has been set by the project partners for 21 May 2015 (first day of delivery).

This important simulation phase consists in:

⁶ In CRE's deliberations of June 2010 and February 2014, CRE requested further justifications and developments in the capacity calculation methods for the French borders.

⁷ For a given network element, the margin corresponds to the physical capacity that the transmission system operator considers available during the calculation of cross-border electricity exchange capacity. The operator assesses for that the proportion of physical capacity which is used based on the assumptions adopted, in particular in terms of the level and location of generation and consumption.

- for transmission system operators, calculating and publishing for each hour, in compliance with the same timing constraints as for market coupling, the maximum cross-border exchange capacity based on the current method (and effectively serving as input in the market coupling) on the one hand, and based on the Flow Based method on the other hand;
- for the power exchanges, in calculating, on the basis of capacity and order books, the effective prices on the one hand, and the prices that would have resulted from the use of the Flow Based method on the other hand.

The results of simulations confirmed the benefits expected from the implementation of this methodology while demonstrating its relevance and robustness:

- further optimisation of the dispatch of European generation units lowers production costs at the level of the Central West region by about 100 million euros per year;
- the methodology is beneficial mostly to participants of countries in which the effect of major congestion could have been lessened by the Flow Based method in 2013 and 2014;
- the methodology is now robust and system operators have shown during the simulation that they were capable of providing the Flow Based parameters in compliance with the temporal constraints specific to the European market coupling mechanism;
- the simulated prices do not present greater volatility compared to the current situation, and price convergence between the region's spot market prices has increased significantly.

Lastly, RTE's request to CRE for the approval of the Flow Based methodology came after a continuous consultation process with market participants. Regulators supported requests for increased transparency insofar they were justified by the complexity of the Flow Based methodology and ensured that the participants could continue to maximise optimisation of the bids they make.

Improvements in terms of transparency, but also the demonstration of robustness led to wide acceptance by market participants of the Flow Based methodology. The public consultations organised first in May and June 2013 by the project partners, secondly by regulators of the Central West region in June 2014, and thirdly by RTE in September 2014 served to better understand market needs and their increasing acceptance, and to start work to improve the Flow Based methodology.

2. CRE's analysis of the method developed by the partners of the Flow Based project

CRE analysed the implementation of Flow Based market coupling as an evolution of the method for calculating maximum cross-border electricity exchange capacity, of the allocation method for this capacity, and of the rule for sharing the resulting income.

2.1. Flow Based market coupling: an evolution of the method for calculating cross-border exchange capacity

The methodology developed by RTE and the other transmission system operators of the region is based on flows and in that regard, has two main features: interdependency between maximum allowable trades at the different borders is made explicit and there is a high degree of coordination.

Efficient treatment of interdependency

For each critical branch of the network (element on which cross-border exchanges have major impact), the Flow Based calculation, as with the current calculation method, takes into account the flows generated by national generation and consumption assumptions (the base case) and deducts the remaining available margin for these elements which may be allocated to cross-border exchanges.

This margin may be distributed to the different borders for which the maximum allowable trade values are sought. Today, this split is determined *ex ante* by RTE according to a rule involving fixed and equal distribution between the France- Belgium and France- Germany borders⁸. The Flow Based method enables an allocation of the margin which takes into account market expectations, and which is therefore no longer done *ex ante* but at the same time as market coupling. This enables the network's physical capacity to be used in the most useful exchanges to further reduce electricity generation costs at regional level.

In the methodology proposed by RTE and its partners, the domain of exchanges which are acceptable from the point of view of compliance with network security is no longer reflected by several maximum exchange values at the different borders which can be fulfilled simultaneously. It explicitly shows interdependence between exchanges: additional exchanges towards a given country can be done only if there are fewer exchanges at another border.

Technically, the maximum allowable exchange domain is no longer represented by eight values corresponding to the maximum import and export at each of the four borders of the Central West region, but by the determination for all of the critical branches of the margin and sensitivity factors (Power Transfer Distribution Factor: PTF). The PTF is an estimate of the physical impact on a critical branch of a commercial exchange at a given border. To estimate this sensitivity factor, the system operator makes assumptions in terms of probable distribution and location of generation units at the source of the additional exchange: this is the Generation Shift Key, GSK.

CRE highlights that it is important for the definition of these two parameters to respect clear and transparent rules and enable the PTF to be representative of the effective physical impact of an additional commercial exchange. This is necessary in order to ensure the economic efficiency of the mechanism and the security of the network. CRE considers that the method proposed by RTE and its partners to make interdependency explicit is relevant.

With regard to the definition of the base case, CRE underlines that it is important that it does not lead to very low or zero remaining available margins for cross-border exchanges. While the zonal approach which is the foundation of the architecture of the European market is the reason for a two-stage capacity calculation – definition of a base case, followed by allocation of available margins to cross-border exchanges - it must not result in too much prioritisation between flows within a zone and cross-border flows.

⁸ The treatment of flows generated by exchanges on other borders in the calculation of maximum exchange capacity at the Belgian and German borders is analysed in detail in section 3.8.

Coordinated capacity calculation

The methodology developed by RTE and its partners is based on coordination as from the start of the capacity calculation process: assumptions concerning the level and location of generation and consumption, and the availability of network elements are pooled by the transmission system operators to jointly calculate the maximum commercial exchange domain.

This coordination must enable better management of uncertainty and should make possible a reduction of the security margins taken into account to deal with that uncertainty, which will enable, apart from the positive effect provided by the explicit interdependency, widening of the exchange domain at borders.

CRE considers that this is a significant improvement compared to the limited coordination applied currently which consists in using as maximum exchange value at a given border, the lesser of two values calculated independently by the relevant system operators.

2.2. Flow Based market coupling: an evolution of the method for allocating cross-border capacity

The method proposed by RTE and its partners is part of the European market coupling tool developed by the power exchanges. The selection of offers made in the spot exchanges is optimised under the constraint of the maximum allowable cross-border capacities. With the Flow Based method, this allowable exchange domain is however greater and handles interdependence between several borders in an explicit and efficient manner.

The parameters for comparing two trades at two different borders are, on the one hand, the two price spreads at these borders, and on the other hand, the PTDFs of exchanges at these two borders. This is a major change since a trade currently considered very profitable with regard to only the price spread could, with the Flow Based mechanism, not be preferred to a trade with a lesser unit benefit, but using less of the network's physical margins and therefore enabling greater overall exchanges.

CRE considers that Flow Based market coupling enables the network's limited physical capacity to be placed in the service of the most useful exchanges, and notes that its implementation should result in a drop in electricity generation costs in the Central West region by about one hundred million euros per year.

More efficient treatment of transit flows

The allocation method proposed by RTE and its partners enables more efficient treatment of the physical flows generated by a commercial exchange between two countries on the network of a third country (transit flows).

With the current management of the system, these flows are an element of uncertainty for system operators, which lead them to reduce the maximum cross-border exchange capacity. The Flow Based method however, enables these transit flows to be taken into account during the implicit allocation of cross-border capacity and even to capitalise on them. When a commercial trade is selected between two countries by the coupling algorithm, and the resulting transit flow in a given critical branch of the network is simulated, an additional exchange having the opposite impact on this same element of the grid may be authorised.

Launch with the intuitive version of the Flow Based method

There are two versions of the Flow Based method, the plain version, and the intuitive one, whose particularity is to prevent the occurrence of certain very specific situations in which a country with a very high price becomes a net exporter, and vice versa.

These apparently paradoxical situations follow the general logic of the Flow Based method: minimise electricity supply costs through better use of the network's limited capacity. On the basis of the responses to

the public consultation organised in June 2014, and given the little difference in optimisation between the two versions, the regulators of the Central West region have decided to launch Flow Based market coupling in its intuitive version.

Nevertheless, CRE considers that the continuation of the parallel run of the plain method is important in order to reconsider this choice in the future. This is one of the regulators' requests outlined in section 3.

2.3. Flow Based market coupling: an evolution of the method for sharing congestion income between the different transmission system operators

Today, capacity management mechanisms are managed border by border, from long term to real time, which enables a better fit between the mechanism for the sale of long-term rights (sell-it) at the spot price spread and the sale of non-nominated rights at day-ahead timeframe. The Flow Based method introduces a coordinated management at day-ahead timeframes of the borders of the Central West region, and from the French point of view, of the interconnections with Belgium and Germany.

It is now possible for capacity allocated at day-ahead timeframe to be lower than the volume of long-term rights sold by market participants, since the capacity thus freed at a border can be used for exchanges at other borders in the Central West region.

Without revising the methodology for sharing congestion income, which currently consists in, for each of the system operators on either side of the border, to take half of the exchange volume multiplied by the spot price spread, a system operator could have a negative income (outside of any disturbance in the functioning of the interconnection).

A new methodology has been developed by system operators to avoid this effect, while building on the previous method: the income is directed towards system operators that experience major congestion so that it may be invested in order to improve this congestion.

CRE considers that this development is relevant.

2.4. Robustness and transparency of Flow Based market coupling

Flow Based market coupling is a complex system requiring a high level of coordination between the partners (system operators and power exchanges) and adaptations by market participants. In order for the expected positive results to not be hampered by any irregularities or by a lack of information, there was a great effort to demonstrate and guarantee the robustness and transparency of the mechanism.

Robustness

The first months of the parallel run had shown a difficulty for the project partners to calculate and publish on a daily basis the capacity domain and market results. The regulators of the region frequently expressed the importance of reducing the number of days in which the allowable exchange domain is not provided in order to be able to approve the Flow Based methodology.

In addition to the major improvement in the performance rate, the project developed fallback mechanisms on two levels:

- to counter the absence of the Flow Based capacity domain, fallback parameters may be calculated by the system operators. They are more conservative than the target parameters, but nevertheless enable an allocation of capacity at day-ahead timeframe;
- to counter a failure in the market coupling mechanism, implicit capacity allocation can be replaced by explicit allocation. This shadow auction mechanism was requested by CRE when approving the successive implementations of market coupling at the different French borders. Within the framework of the Flow Based method, this implies that the system operators recalculate bilateral exchange capacity from the Flow Based parameters. The method enabling this is also provided for in the approval document submitted to CRE by RTE.

Transparency

In order to better accompany market participants in the transition towards the Flow Based mechanism, and to enable them to optimise their bids as well in the Flow Based system as in the current coupling system, a demanding transparency framework has been set up, not only in order for participants to understand how the capacity domain is built, but also for them to anticipate it. The regulators of the Central West region supported the relevant needs expressed by market participants during the informal and formal consultation phases in order for them to be fulfilled as much as possible by the project partners.

2.5. Synthesis and analysis by CRE

All of the regulators of the Central West region cooperated over the last few years to implement an efficient Flow Based methodology. The regulators also cooperated to request improvements to the successive methodological proposals of project partners.

CRE considers that the methodology developed by the partners in response to the latest requests of the regulators and which is submitted by RTE to CRE for approval is a solution that corresponds to the principles of the target model as described in the CACM regulation.

CRE considers that the go-live of the Flow Based mechanism is a major and positive development and that the Flow Based mechanism is a robust and efficient methodology for the calculation and allocation of capacity at day-ahead timeframe. It must in fact enable increased optimisation of generation facilities in the Central West region, and more coordinated and therefore more secure management of the electricity system by the transmission system operators.

CFE considers however, that the project partners must continue to improve the methodology in the months following its go-live.

Requests for development are addressed in the following section.

3. CRE's requests to RTE, coordinated with regulators of the Central West region, for future developments of the Flow Based methodology

The following improvements, requested by CRE to RTE are in line with the common opinion elaborated by all of the regulators of the Central West region (position paper of CWE NRAs on Flow Based market coupling), published on CRE's website along with the present deliberation.

3.1. Implementation of the solution to address the competition issue involving price taking orders

The Flow Based method results in the prioritisation of orders based on price and physical influence on the network. The following theoretical case has been identified: it could occur price-taking demand orders (3000 €/MWh) not to be accepted in a country to give priority to buy orders at a lower price given the ratio between the two sensitivity factors. This phenomenon, which could only occur in very rare cases, could have an indirect effect on the supply/demand balance of a country although intraday and balancing timeframes can correct an imbalance observed following the day-ahead timeframe.

Following the request by regulators of the Central West region, the project partners have identified a solution to respond to this issue. In compliance with the schedule decided with all of the regulators, CRE requested RTE to implement this solution before November 2015.

3.2. Implementation of an intraday capacity calculation before November 2015

The Flow Based mechanism is an improvement to the day-ahead capacity calculation. An efficient intraday capacity calculation also has major potential for improvement for two main reasons:

- approaching real time improves knowledge of the status of the electricity system and enables re-evaluation of the security margins considered by the system operators;
- updating assumptions can serve to take advantage of the changes made in the European electricity system. For example, today, under the assumption⁹ of a reduction in the France/England IFA interconnection, an important margin reserved for the trades on this border can be made available for trades on the Belgian or German border.

In compliance with the request by regulators of the Central West region, CRE asks RTE to implement as from November 2015, a systematic calculation of intraday capacity on the basis of updated assumptions compared to the daily timeframe.

CRE reiterates that the target is still a Flow Based calculation, comparable to that developed for daily timeframes. It draws RTE's attention to the necessary compatibility between this capacity calculation method and the capacity allocation target model for this timeframe (continuous implicit allocation as developed within the framework of the XBID project).

3.3. Treatment of the new interconnection between Belgium and Luxembourg

An interconnection was scheduled to be commissioned between Belgium and Luxembourg by end 2015. In compliance with the request by regulators of the Central West region, CRE requests RTE to provide it with an impact assessment four months at the latest before the commissioning of the interconnection, specifying the way in which project partners intend to handle this development in order for it to be incorporated as best as possible in the Flow Based market coupling (in particular in terms of the sharing of congestion income).

⁹ This specific case was recurrent end 2012/start of 2013 against a technical difficulty and major maintenance work.

3.4. Implementation of financial transmission rights at the Belgian border for delivery as at 1 January 2016

The Flow Based principle aims to place all of the network's available margin in the service of the most useful trades, and possibly, for certain hours, of trades at a single border. This could in return reduce available daily capacity at other borders. In situations in which the nomination rate of long-term products is very high, this could have an effect on the liquidity of the smallest markets in the region.

In that regard, the move from long-term physical transmission rights, PTR, to a financial form (financial transmission rights, FTR) is a relevant response. CRE notes that such a request had been formulated by regulators in 2013 and had not been satisfied. In accordance with the request by all of the regulators of the region, CRE requests RTE for such a development to be set up at least at the Belgian border for delivery as at 1 January 2016. This development is currently being addressed in a public consultation by transmission system operators within the framework of the implementation of the harmonised auction rule (HAR) at European level.

In order to respond to this measured risk within the implementation of FTRs, the project partners have set up an interim solution which, under certain conditions, guarantees a minimum day-ahead capacity volume.

3.5. Assessment for regulators on the effects of the Flow Based mechanism

The regulators of the Central West region wish to accurately assess the effect of the introduction of the Flow Based mechanism and in particular, the effect of competition introduced between two same-price offers by the difference between the sensitivity factors related to these two offers.

Regulators signed an agreement to organise this assessment, in association with the project partners, based on the first year of the running of the Flow Based mechanism. This agreement is published simultaneously to the present deliberation.

3.6. Implementation of all of the transparency tools discussed with the project partners

The entire transparency framework must be ready for the go-live of the Flow Based mechanism, and, for the most part, is already available for market participants. For the transparency elements whose terms were recently defined with the project partners (publication of a static network model, publication of aggregated description data for the base case), regulators of the Central West region also expressed a preference for implementation prior to the go-live. In any event, if one of these elements were to not be ready, CRE requests RTE to make it available at the latest three months after the go-live of Flow Based market coupling.

3.7. Justification of maximum import and export constraints applied by all system operators

For each country of the region, a maximum import and export limit is explicitly applied and could result in the reduction of the allowable exchange domain beyond the application of the load limiting principles for each of the network elements which are the basis of the method described in part 2.1.

Such limits are already applied in the current capacity calculation methodology and were restrictive during the Flow Based simulations for a significant number of hours. In order to justify the use and design of these limitations, some initial elements were provided to CRE by RTE at the same time as the Flow Based approval package. CRE will continue, on this basis, discussions with RTE on this issue.

3.8. Implementation of advanced hybrid coupling at the borders outside the Central West region

The implementation of the Flow Based mechanism in the Central West region is only the first step before extension to the continent, as provided for by the CACM regulation. The regulators of the Central West region will cooperate with their counterparts in the other relevant regions, and CRE requests RTE to do the

same with the project partners, in order to prepare as best as possible and beforehand, the extension of the Flow Based mechanism.

In addition, improvements may be introduced with regard to the taking into account of trades at borders outside the Central West region in the Flow Based method. In the method submitted by RTE for CRE's approval, exchanges at other borders are handled as follows:

- an assumption corresponding to the effective exchanges at these borders for a reference day;
- management of the possible difference between the reference considered and the exchange that will be realized through the flow reliability margin (FRM).

The first of these two steps consists in the booking of margin for exchanges at borders outside the Central West region, and is therefore an *ex-ante* allocation of margin.

Pending the extension of the Flow Based mechanism to other regions, and therefore to other French borders, an interim solution, termed "advanced hybrid solution", to influence the distribution of margin between the borders of the Central West region and a third border based on the economic value of the different exchanges, was the subject of initial discussions between regulators and project partners.

CRE requests RTE to prepare, with project partners, a report demonstrating the feasibility and defining the main elements of the advanced hybrid coupling solution, one year following the go-live of the Flow Based mechanism.

For CRE, this solution should in particular endeavour to handle interdependency between exchanges at the Central West borders and the France-England border.

3.9. Revision of the method for sharing congestion income

A method for sharing income is to be developed by system operators at European level one year following the entry into effect of the CACM regulation. CRE requests RTE to analyse the impact of this development compared to the congestion split key which will be used as from the go-live of the Flow Based mechanism.

3.10. Review by operators and power exchanges of the results that would have been brought by the use of the plain version of the Flow Based method

On the basis of the responses to the consultation organised in June 2014, regulators chose to launch the intuitive version of the Flow Based mechanism. However, the different criteria that may be used to compare both versions of the Flow Based mechanism does not clearly favour one of those versions over the other. In compliance with the request made by all regulators to the project partners, CRE asks RTE to continue to simulate the market results that would have stemmed from the use of the plain version, and to present to it one year after the go-live of the Flow Based mechanism, an exhaustive report comparing both methodologies.

On that basis, the regulators will reconsider the choice between the two versions.

3.11. Development of the flow reliability margin (FRM)

The methodology proposed to calculate the reliability margin is a systematic and relevant approach which shall ensure compliance with the security criteria of system operators.

In accordance with the request by regulators of the Central West region to the system operators concerned, CRE asks RTE to study all the electricity system management arrangements which could, by being developed, lead to a better dimensioning of the reliability margin while ensuring compliance with RTE's security duties. This may be the case for example, of generation scheduling terms.

Regulators expect a report on this topic one year after the implementation of the Flow Based mechanism.

3.12. *Revision of the critical branch selection criterion*

System operators proposed a criterion for selecting critical branches, i.e. for selecting branches on which major physical flows are generated by cross-border trades. Only these elements of the network can limit the cross-border electricity commercial exchange domain.

It is however important to ascertain whether one of these constraints could not be more effectively handled by a direct action by system operators (for example, redispatching).

In accordance with the request made by regulators of the Central West region to the system operators, CRE asks RTE to demonstrate the effectiveness of the selection rule, and if appropriate, to propose to modify it, at the latest upon submission of a regional capacity calculation method as provided for in the CACM regulation.

3.13. *Revision of the definition of the base case and assumptions considered for its construction*

In accordance with the requests made by regulators of the Central West region, CRE asks RTE to continue to improve the representativeness and relevance of considered assumptions, and to work with the other system operators in order to further harmonise their approaches for constructing the base case. This should enable reducing uncertainties and thus better dimensioning the reliability margins considered to tackle them.

Moreover, it is important for remedial actions to be taken into account more precisely.

These improvements must be made, at the latest, upon submission of a method for calculating regional capacity as provided for in the CACM regulation.

3.14. *Adaptation of methods to define generation shift keys (GSKs)*

In accordance with the request made by regulators of the Central West region to system operators, CRE asks RTE to improve the determination of generation shift keys on three fronts:

- move towards greater harmonisation;
- ensure that the definition of these parameters reflects the application of transparent methodologies, defined and approved *ex-ante* by regulators;
- enable better representativeness of the simulation of the physical impact on a network element of a commercial exchange through sensitivity factors. This requires in particular the taking into account of more precise assumptions and an hourly updating of these factors.

These improvements must be made, at the latest, upon submission of a method for calculating regional capacity as provided for in the CACM regulation.

3.15. *Implementation of a common network model as provided for by the CACM regulation*

The CACM regulation sets out that European system operators must publish a common network model. CRE invites RTE to participate actively in this work.

4. Other developments proposed by RTE in terms of capacity calculation

4.1. France-Switzerland

The implementation of the Flow Based mechanism has made it necessary to adapt day-ahead capacity calculation at the France-Switzerland border.

Capacity calculation on a given border uses trade assumptions at other borders because of the impact that these trades could have on the same network elements. Therefore, as described previously, the Flow Based mechanism uses trade assumptions for borders outside of the Central West region, with uncertainty concerning these assumptions being covered by the reliability margin (FRM).

Inversely, capacity calculation for the France-Switzerland border uses trade assumptions for the France-Belgium and France- Germany borders. Until now, these assumptions were dependent on the maximum bilateral capacity at these two borders, however, with the Flow Based mechanism, they will no longer be available when the maximum exchange capacity at the Swiss border is calculated.

An alternative method has been developed to maintain the current average capacity level. Because of the existence of historical long-term contracts at this interconnection, the portion available for the market is rather limited. CRE considers that it is not acceptable to further lower it, before new optimisation steps are implemented at this interconnection.

4.2. Reliability margin

Furthermore, in February 2014, CRE requested RTE to further justify the reliability margins considered and to no longer take into account assistance contracts between system operators to define the margins. While these contracts are obviously important for the security of the European system, their existence does not justify booking of a portion of interconnection capacity. These contracts must enable to ensure the balance between supply and demand in France or in neighbouring countries. Nevertheless, market mechanisms, including Flow Based market coupling, allow for saturating available capacity towards a country in difficulty. Since these contracts are only useful if capacity is not saturated, reserving a portion of exchange capacity for these contracts is therefore ineffective.

RTE conducted analysis and proposed a development that would result in the reduction of the reliability margins by 50 MW at the France- Belgium border and by 50 MW at the France- Germany border when long-term capacity is calculated.

5. CRE's decision

On the basis of its analysis presented in section 2, CRE approves the Flow Based methodology as submitted to it by RTE. This methodology includes all of the terms developed by the Central West project partners in the document "documentation of the CWE FB MC solution, as basis for approval-request".

CRE's approval therefore concerns:

- a new methodology for calculating capacity for day-ahead timeframe at the Belgian and German borders, and the subsequent adaptation of the intraday capacity calculation at the same borders. More generally, CRE approves the new version of the "methodology for calculating cross-border electricity exchange capacity applied by RTE at the French borders", being the adaptation of the capacity calculation at the French-Swiss border and of the reliability margins;
- the development of the terms for allocating capacity at day-ahead timeframe which consists of the passage from "simple" market coupling to Flow Based market coupling at the Belgian and German borders;
- the evolution of the rule for sharing congestion income generated by the day-ahead capacity allocation between RTE and the other operators of the Central West European region.

It is accompanied by requests for assessments, and where appropriate, requests for future developments, which are formulated in section 3.

The go-live of the Flow Based mechanism scheduled by project partners for 21 May 2015 (first day of delivery) can take place only following the approval of the other regulators of the Central West region.

Paris, 26 March 2015,

For the Energy Regulatory Commission,

The Chairman,

Philippe de LADoucette