



DELIBERATION NO 2017-155

Deliberation by the French Energy Regulatory Commission of 22 June 2017 on guidelines for the French electricity system balancing roadmap

Present: Christine CHAUVET, Hélène GASSIN, Jean-Laurent LASTELLE and Jean-Pierre SOTURA, commissioners.

In the context of increasing needs for flexibility in order to accommodate more intermittent generation and recent developments in the European regulatory framework for electricity balancing, in 2015 CRE requested RTE to establish a pluriannual work programme defining the target balancing model to be applied in France, as well as the scheduling of the developments needed to implement this target model.

The first part of the “*green paper on French electricity system balancing*” (hereinafter “green paper”), published by RTE in July 2016, presents, in an educational and detailed manner, the French electricity system balancing model, which is based on the following fundamental principles:

- centralised, proactive and integrated balancing management, enabling RTE to use a limited volume of reserves on the one hand, and to simultaneously manage balancing and local congestion using the same pool of balancing energy bids on the other hand;
- the broadest possible participation in the balancing mechanism: the obligation to provide available power through “implicit” bids for power-generating units connected to the transmission system, allowing free bids¹, demand response aggregators, etc.;
- efficient use of balancing bids depending on their costs but also their technical characteristics, according to a technical and economic merit order.

CRE very much welcomes this initiative by RTE which structures exchanges with stakeholders around an overall vision of the French balancing model. This is useful at a time when major developments in the functioning of European electricity markets are being proposed by the European Commission.

In the third part of its green paper, RTE proposes a roadmap for French electricity system balancing, the goal of which is to respond proportionately to the challenges stemming from energy transition and European integration, without undermining the foundation of the French balancing model. Between 16 December 2016 and 20 January 2017, CRE ran a public consultation with market participants on RTE’s proposal as well as on its preliminary analysis².

To a great extent, CRE agrees with RTE’s opinions and proposals concerning the relevance of the main elements of the French balancing model.

The French balancing model is however required to evolve in the next few years in order to:

- strengthen European market integration, as provisioned specified by the European guideline on electricity balancing, by implementing, as a matter of priority, balancing energy exchanges between the different European countries;

¹ Bids not resulting from procurement before real time

² <http://www.cre.fr/documents/consultations-publiques/feuille-de-route-de-l-equilibrage-du-systeme-electrique-francais>

- accompany energy transition which generates increased need for flexibility in the French and European electricity system so as to accommodate intermittent electricity generation; the following in particular must be addressed: incentives conveyed to different balancing stakeholders, participation of new sources of flexibility, and coordination between the transmission system operator (hereinafter “TSO”) and distribution system operators (hereinafter “DSO”);
- improve transparency of balancing mechanisms to send the appropriate signals to participants.

The French balancing model

The development of exchanges and European balancing market integration will require reconciling structurally different national balancing processes (scheduling of generation managed by the TSO in central dispatch systems or by scheduling agents in self-dispatch systems; “proactive” balancing models where the TSOs anticipate imbalances or “reactive” models in which the TSOs react only to these imbalances), which often reflect different fundamentals in each country: energy mix, size of the network and possible congestion, level of competition, etc. CRE considers, like RTE, that for market integration, it is not necessary to standardise these mechanisms which are adapted to the needs of each TSO that uses them.

This position is in line with the Electricity balancing guideline. As it stands, the regulation provides that the best means of integrating balancing mechanisms is through standardisation of balancing energy products, which will be shared within European exchange platforms and activated based on merit order. CRE considers that this regulation is a satisfactory compromise which can enable the emergence of a liquid market, and therefore lead to the success of European integration, while maintaining local or national specificities so that each TSO can balance their electricity system and ensure system security.

In the case of France, CRE shares RTE’s view on the overall consistency of the French model and its main advantages. Until presently, this model has allowed limiting balancing costs for the French electricity system. Its recent developments have considerably increased competition in the different balancing market segments, and in particular, the participation of demand response. CRE considers that the centralised, proactive and integrated balancing model implemented in France can therefore ensure optimal activation of flexibility sources depending on their technical and economic characteristics and the status of the network, and therefore guarantee optimal short-term allocation of resources.

CRE notes that maintaining this balancing model requires the TSO to have an exclusive window for action after intraday market gate closure time which is sufficiently long. During this period, market participants can no longer take action that has a physical impact on the network. They therefore wish for this period to be as short as possible, in order to be able to balance their portfolio as close as possible to real time.

The duration of this period is therefore a trade-off between the flexibility given to market participants and the time left to the TSO to balance the system, and therefore defines the balancing model at national level. It is the result of the lead time and the frequency of intraday cross-border gate closure times and scheduling process gate closure times.

CRE considers that maintaining a one-hour lead time is important for ensuring the sustainability of the French balancing model, and that reducing this time cannot be a means to reduce the TSO exclusive time window. Nevertheless, such a reduction will be possible ultimately, thanks to the increase in the number of intraday cross-border gate closure times and the number of scheduling process gate closure times. Such an increase in the frequency of these gates however cannot be conducted simultaneously with the implementation of the project regarding exchange of balancing energy from replacement reserves with an activation time of less than 30 minutes (known as the Trans European replacement reserves exchanges project – TERRE). A choice between these two objectives is therefore necessary (see following part).

CRE considers that the simultaneous management of balancing and local congestion using a single pool of bids is an inherent characteristic of the current model, and a measure of economic performance in the long term.

Lastly, CRE notes that the continuous management of margins which is integral to the “margin model” maintains the reserve volume procured at a low level, and therefore reduces the cost borne in that regard by the French consumer.

European balancing market integration

The principles: balancing energy exchange platforms

Balancing energy exchanges are the foundation of the Electricity balancing guideline; they will capture most of the gains related to balancing market integration. For example, the cost-benefit analysis of the TERRE project puts forward gains estimated at about €110 M per year for exchanges between seven countries for this type of reserve alone³.

Similarly, imbalance netting among TSOs (known as International Grid Control Cooperation – iGCC), in which RTE has participated since February 2016 and which brings together eight TSOs, generates for France, benefits estimated at about €10 M per year.

CRE supports the efforts made by RTE to define the market design of these platforms.

RTE was a driving force in the development of the TERRE project and CRE considers it essential to prioritise the implementation of this platform, which represents the first regional balancing energy exchange project based on the principles recommended by the Electricity balancing guideline. In addition, this platform will serve to sustain the functioning of the proactive French model, by giving the French electricity system access to a pool of standard products of replacement reserve shared by all bordering countries using this reserve.

This is why CRE prioritises the implementation of the TERRE project by 2019, and then the increase the frequency of the TERRE bid selection process, which will increase the frequency of intraday cross-border gate closure times and scheduling process gate closure times. This development will ultimately contribute to reducing the TSO exclusive time window and give more flexibility to participants for balancing their portfolios.

RTE's efforts to implement balancing energy exchange platforms for all reserves should be continued. In particular, the implementation of a selection of frequency restoration reserve bids based on a common merit order list shall be the subject of priority work. However, if a regional initiative concerning selection of frequency restoration reserve bids based on a common merit order list cannot be launched before the end of 2017, CRE is in favour of such an initiative at French level only, to be examined by RTE in the first half of 2018.

Standard products and specific products

CRE considers that standard products shared on European platforms should be prioritised by RTE for system balancing, in order to take full advantage of European integration.

In addition, RTE may continue to use specific national products for congestions management, reconstitution of margins and resolving imbalances (only when they cannot be covered by standard products) in order to secure the electricity system.

Incentives for balancing responsible parties

Balancing responsible parties (hereinafter BRPs) have a major role to play to control electricity system balancing costs, in particular within a context of increasing needs for flexibility in the electricity system as a whole. CRE considers that the strengthening of incentives for BRPs to balance their perimeter, greater accuracy of the measure of their imbalances and more complete information on consumption within their perimeter can contribute to an overall reduction in balancing costs. The resulting economic signals should foster the development of flexibility where it is most useful for the electricity system and the availability of this flexibility.

Strengthening BRP incentives to balance their perimeter will be centred, over the next few years, around several developments concerning:

- the reduction of the imbalance settlement period for BRPs from 30 minutes currently to 15 minutes, based on a schedule to be defined: this development could take place as from 2021, and by the latest as from 2025; in order to determine the appropriate date for implementing this development, CRE shall carry out a study in the second half of 2017;
- the imbalance settlement price: several means may be envisaged in order for it to convey stronger incentives (symmetrical price through elimination of the "k" factor, price based on a marginal reserve price instead of a weighted price, consideration of the cost of exceptional balancing measures such as interruptibility, drop in voltage, or load shedding in the event of supply scarcity).

Rollout of smart meters will significantly improve knowledge on consumption which is currently estimated through profiling (more than half of national consumption). In that regard, CRE has formulated a series of recommenda-

³ These benefits are considerably greater than the development costs for the TSOs estimated at €25 M (adaptation costs for balancing operators have not been quantified at this stage).

tions aimed at improving (i) the accuracy of the profiling system and possibly the way in which consumption is allocated to BRPs, (ii) the accuracy of the associated financial flows and (iii) the timeframe under which this process is conducted. These developments mainly concern:

- generalised use of load curves for low-voltage (> 36 kVA) and medium-voltage consumers, the implementation of “dynamic” profiling, and the study of the possibility of proposing to BRPs the reconstitution of their clients' consumption based on dynamic profiles established with a panel of their own clients instead of a national panel;
- settlement of all imbalances at the imbalance settlement price, and not at the spot price;
- more rapid provision of information for BRPs concerning the balance of their perimeter.

Participation of renewable energy, load and storage

In its green paper, RTE made proposals to extend participation in the balancing mechanism to renewable energy, demand response and other sources of flexibility such as storage.

CRE is in favour of the bid aggregation model proposed by RTE and considers that it will respond to the challenges of European integration and increasing use of non-conventional generation. It considers that the use of this model should enable broader participation in the balancing markets. Moreover, it should not restrict the possibility for a site to be operated by several operators for the supply of different services if satisfactory technical and economic solutions have been identified for the cooperation.

The modalities for procuring balancing capacity are also a means of promoting participation of new flexibility sources in electricity system balancing. CRE is in favour of promoting capacity procurement based on modalities compatible with the standard European products defined for each type of reserve. In addition, CRE considers that RTE should continue its efforts to develop and open reserve constitution mechanisms, in particular for the frequency restoration reserve.

CRE considers that participation of renewables in the balancing mechanism is beneficial to the electricity system, in particular through the use of their flexibility for downward balancing and for congestions management. This participation raises the question about interaction with support mechanisms for renewable energy, which could be addressed in the upcoming years.

Lastly, the participation of new sources of flexibility connected to the public distribution system in electricity system balancing will require increased coordination among system operators.

Transparency of balancing mechanisms

CRE considers that increased transparency of the balancing mechanism can send more long-term economic signals aimed at encouraging the development of flexibility where necessary, and at promoting their availability and activation when they are most useful for the electricity system.

CRE therefore requests RTE to improve the transparency of the functioning of balancing mechanisms, particularly by publishing detailed information on the bids made, concerning both standard and specific products, in compliance with the Electricity balancing guideline, but also by publishing information specific to the French balancing model, such as filtered bids in the merit order list and the reason associated (reconstitution of power margins, congestions management, etc.).

The next steps

The present deliberation shows the need for additional studies which shall have to be conducted by RTE and CRE from 2017 to 2019. These studies will help to determine the modalities for implementing the developments presented. They will also fuel thought on future balancing mechanism developments, in consultation with all stakeholders. CRE invites market participants to actively take part in defining the assumptions and modelling choices that will be used for all of these studies.

CRE also invites market participants to actively take part in upcoming consultations on the development of rules for ancillary services and the balancing mechanism, which will be used to implement CRE's guidance on the French electricity system balancing roadmap. These developments will be examined as from the second half of 2017 (MA-RE v8.3 and v9 rules, which will enter into effect as at 1 January and 1 July 2018 respectively).

All of these developments over the next few years will enable the French system to actively participate in European balancing market integration and in the implementation of the Electricity balancing guideline, which are priority objectives.

Lastly, in its public consultation, CRE highlighted its concerns regarding certain provisions related to balancing presented by the European Commission in its recently published proposal (“Clean energy for all Europeans” of 30 November 2016, updated on 27 February 2017). The public consultation did not lead to question its preliminary analysis. CRE’s observations about the European Commission’s proposals related to procurement of balancing reserves and demand response mechanisms design in particular, are presented in the papers published by CRE on 21 June 2017. In particular, CRE is in favour of the objective to enable demand response operators to use flexibility independently of any agreement with the suppliers of the consumers concerned. However, it has concerns about certain modalities, and does not agree with the approach which consists of allowing only an exceptional basis, payment by the demand response operator to the supplier of the site whose consumption has been curtailed or shifted⁴.

⁴ For the purpose of maintaining, for this supplier's BRP, responsibility for the supply of the energy block transferred to the demand response operator.

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1. INTRODUCTION

1.1 OBJECTIVES OF THE ROADMAP FOR ELECTRICITY SYSTEM BALANCING

Ahead of real time, RTE relies on the BRPs to balance the electricity system, and through financial incentives, it encourages them to maintain a balance between electricity injected into and withdrawn from their perimeter. One hour before real time, RTE “takes back control” over the electricity system and it alone can intervene to ensure balance. In that regard, RTE activates the best balancing energy bids proposed by balancing service providers. In order to ensure that it has sufficient power to balance the system, RTE procures a portion of these reserves in anticipation of its needs. Balancing the electricity system therefore brings into play different participants, which supply their flexibility capacity with different timeframes, from the furthest from real time (contracts signed before the day-ahead timeframe) to the closest (system frequency response services).

Access to electricity system balancing mechanisms is defined, on the one hand, by scheduling rules, the balancing mechanism, and the balancing responsible party mechanism (known as “MA-RE rules”)⁵ and, on the other hand, by rules related to system frequency response services (known as “SSy *Fréquence* rules”)⁶. These rules are proposed by RTE and approved by CRE (Articles L. 321-10, L. 321-11 and L. 321-14 of the French energy code). The approach followed in the roadmap proposed by RTE, and the present deliberation and the requests it contains, are with a view to the approval of these rules by CRE over the next few years.

In the context of increasing needs in order to accommodate more intermittent generation and recent developments in the European regulatory framework for electricity balancing (entry into effect of the European guideline on electricity balancing and the European Commission’s “Clean energy for all Europeans” proposal), it is essential for all participants concerned at the French level to anticipate the upcoming developments. Therefore, in 2015 CRE requested RTE to establish a pluriannual work programme defining the target balancing model to be applied in France, as well as the scheduling of the developments needed to implement this target model.

RTE ran a consultation in the fourth quarter of 2015 and in July 2016 it published a document entitled “*Green paper on French electricity system balancing*” (hereinafter “green paper”). This paper first reviews the current state of the functioning of the French balancing model and presents RTE’s views regarding its advantages and disadvantages. It then describes the developments proposed by RTE to implement the European texts as well as the other development proposals envisaged by RTE. These developments have been divided into ten areas of work. The document also provides a schedule associated with all of these developments.

Between 16 December 2016 and 20 January 2017, CRE ran a public consultation with all stakeholders⁷ on the roadmap proposed by RTE, as well as on its own preliminary analysis. Within the framework of this preliminary analysis, CRE stated that it shared RTE’s view about the efficiency of the French balancing model. CRE deemed it relevant to maintain the major principles, while making certain changes in order to adapt it to the future developments in the electricity system, in particular energy transition and European integration.

CRE consulted participants about this analysis and its development proposals concerning the ten areas of work proposed by RTE, as well as its proposals for the adaptations to the schedule proposed by RTE. CRE also questioned participants about the provisions proposed in the “Clean energy for all Europeans” package published by the European Commission in November 2016, concerning procurement of balancing reserves and participation of demand response in markets.

On 6 January 2017, CRE held an information and discussion workshop with market participants on RTE’s roadmap and on its public consultation.

22 participants took part in CRE’s public consultation. The non-confidential responses are published on CRE’s website⁸. CRE considers that it is essential for market participants to be involved in this work, and therefore commends their active participation.

The present deliberation aims to define the target French balancing model and to give market participants a view as accurate as possible of all of the developments that will be necessary for that purpose as well as the chronology of events. The elements presented further on in this document are based on all of the information currently available to CRE.

⁵ The rules in effect may be consulted on the following page: https://clients.rte-france.com/lang/fr/clients_produceurs/services_clients/regles.jsp.

⁶ The rules in effect may be consulted on the following page: http://clients.rte-france.com/lang/fr/clients_produceurs/services_clients/regle_ssy_pop_frequence.jsp.

⁷ <http://www.cre.fr/documents/consultations-publiques/feuille-de-route-de-l-equilibrage-du-systeme-electrique-francais>.

⁸ <http://www.cre.fr/documents/consultations-publiques/feuille-de-route-de-l-equilibrage-du-systeme-electrique-francais>.

1.2 LEGAL FRAMEWORK

1.2.1 Law No 2015-992 of 17 August 2015 on energy transition towards green growth

Act No 2015-992 of 17 August 2015 on energy transition towards green growth (hereinafter “energy transition act”) introduced in the French energy code provisions aimed at promoting the participation of demand response and renewable energy in market mechanisms.

Article 168 of the energy transition act introduced new provisions related to demand response. These provisions consist in (i) setting up a framework for taking into account implicit demand response⁹ that can co-exist with explicit demand response bids¹⁰, (ii) coverage by RTE of a portion of the payment due by the demand response operator to the supplier¹¹ (under certain conditions)¹², and (iii) specifying the role of DSOs in following up demand response perimeters¹³.

Article 104 of the Energy transition act provides for a new mechanism for supporting renewables and their participation in the market, based on the provision of additional remuneration¹⁴. With this new contractual mode and unlike the purchase obligation regime, renewable energy producers eligible for the mechanism become responsible for proposing the energy produced in the markets, without the need for a buyer under a purchase obligation. Article 119 of the Energy transition act also provides for the possibility for the government to take measures through orders aimed at facilitating accommodation of renewables in the markets or in the electricity system such as the extension of the scheduling mechanism to certain installations connected to the public electricity distribution networks.

Article 199 of the Energy transition act specifies that regional and local authorities may propose to DSOs, on an experimental basis and in association with producers and consumers connected to the public distribution systems, local flexibility services, which can also participate in the balancing market.

All of these provisions will require changes to balancing mechanism access, which are addressed in RTE's green paper and in the present deliberation.

1.2.2 European guidelines on electricity balancing

Following a process started in 2012 with the publication of framework guidelines by the Agency for the Cooperation of Energy Regulators (hereinafter “ACER”), the European guideline on electricity balancing¹⁵ was voted by Member States on 16 March 2017. Subject to the absence of opposition by the European Parliament and/or the Council¹⁶, this guideline was expected to enter into effect in autumn 2017.

It sets out recommendations for the integration and proper functioning of balancing markets while leaving much latitude to TSOs to propose practical implementation. It is centred around the following concepts:

- balancing energy market integration;
- modalities for constitution of balancing capacity;
- harmonisation of the principles governing financial settlements between the TSOs, balancing service providers and BRPs.

1.2.2.1 Principal concepts of the European guideline on electricity balancing

Balancing energy market integration

The European guideline on electricity balancing provides for the construction of European balancing markets, without imposing upon TSOs the type of reserves (automatic frequency restoration, manual frequency restoration, replacement) to prioritise to balance their system. Articles 19 to 22 of that guideline impose the implementation of European platforms aimed at:

⁹ A supplier may convey an incentive to its clients to reduce their consumption based on a price signal, which varies according to the times during the day and days of the year. This load curtailment is not “explicitly” sold on the markets.

¹⁰ Articles L. 271-1 to L. 271-4 of the energy code

¹¹ Article L. 271-3 of the energy code

¹² See decree No 2017-437 of 29 March 2017

¹³ Article L. 322-8-9 of the energy code

¹⁴ Articles L. 314-18 to L. 314-27 of the energy code

¹⁵ The guideline is available on the website of the European Commission: <http://ec.europa.eu/energy/en/topics/wholesale-market/electricity-network-codes>.

¹⁶ The European Parliament and the Council have a 3-month deadline (as from the date of the referral by the European Commission) to oppose to the draft guideline.

- exchange of energy from the replacement reserve¹⁷, at the latest two years following its entry into force;
- exchange of energy from the manual frequency restoration reserve, at the latest four years following its entry into force;
- exchange of energy from the automatic frequency restoration reserve, at the latest four years following its entry into force;
- imbalance netting among TSOs, at the latest two years after its entry into force.

For the first three platforms, exchanges will be carried out according to following principles:

- one or more standardised energy products will be defined¹⁸;
- the products will be activated according to the common merit order list;
- the principle of marginal pricing;
- exchanges will take place according to a “TSO-TSO” model: each balancing service provider shall place their bids with their TSO.

CRE is in favour of these provisions, which will give TSOs access to the most cost-effective balancing energy bids available. For example, the impact assessment conducted in 2013 by the European Commission¹⁹ on the border between France and the United Kingdom estimated the benefit related to these exchanges at approximately €50 M per year.

Constitution of balancing capacity

Although the European guideline on electricity balancing focuses primarily on balancing energy exchanges, it also addresses the matter of reserve constitution. In particular, Article 32 of this guideline requires constitution:

- of frequency restoration reserves and replacement reserves through the market;
- close to real time when this is economically efficient;
- separately for upward and downward capacity²⁰.

The European guideline on electricity balancing also specifies that the TSOs may voluntarily implement exchanging and sharing of reserves. For this purpose, it establishes a framework (Article 33) and describes the methods according to which cross-border capacity can be reserved for such balancing capacity exchanges (Article 38).

CRE considers that the model established by these provisions is appropriate: the principles proposed should improve the functioning of the balancing capacity markets, while giving a certain level of flexibility to TSOs on how they implement them.

Harmonisation of the principles governing financial settlement

Although it is not necessary to standardise national balancing processes to ensure European integration and in particular the development of balancing energy exchanges, a certain degree of harmonisation is required to ensure fair competition among the balancing service providers in the different countries. The framework of this harmonisation is part of the package of documents that TSOs must submit to national regulatory authorities for each energy exchange platform.

Title V of the European guideline on electricity balancing therefore aims to define the main common principles of financial settlements among TSOs, balancing service providers and BRPs.

In particular, Chapter 4 of the guideline recommends harmonisation at European level of imbalance settlement processes. This includes in particular the use of a single imbalance settlement price²¹ and requires shifting towards a 15-minute imbalance settlement period within three years after its entry into force, with the possibility of an exemption up until 1 January 2025 subject to the approval of the national regulatory authority concerned.

¹⁷ Only the TSOs using this reserve will have the obligation to participate this platform.

¹⁸ A framework for the definition of these standard products is provided by Article 25 of the guideline but TSOs are ultimately responsible for defining such products.

¹⁹ https://ec.europa.eu/energy/sites/ener/files/documents/20130610_eu_balancing_master.pdf.

²⁰ Temporary national exemption is possible subject to the approval of the national regulatory authority concerned.

²¹ This however is not an obligation since the TSO can, provided that it is justified, use a dual pricing system for settling imbalances.

1.2.2.2 Voluntary early implementation of the European guideline on electricity balancing

Given the magnitude of changes to be carried out within the framework of the implementation of the European guideline on electricity balancing, several voluntary early implementation projects have emerged at the TSOs' initiative²². CRE notes that RTE has been particularly active in this regard.

One of the most advanced projects at this stage is the "TERRE" project ("Trans European Replacement Reserves Exchange"). It brings together TSOs (Spain, France, Italy, Portugal, United Kingdom and Switzerland) having a "proactive" balancing model (model in which the TSO anticipates system imbalances). This project aims to implement exchange of energy from the replacement reserve. The benefits of this project are estimated at €110 M per year. An initial public consultation²³ was conducted by the TSOs in March 2016 and contained a proposal by the TSOs concerning the main elements of the TSO-TSO project design. Following this public consultation, the national regulatory authorities concerned published a common opinion²⁴ containing a set of recommendations for TSOs. A second public consultation including these recommendations and completing the elements of the design, particularly the financial settlements among TSOs, balancing service providers and BRPs, is expected to be conducted in summer 2017. The European Network of Transmission System Operators for Electricity (hereinafter "ENTSO-E") declared this project the reference pilot project for the implementation of Article 19 of the European guideline on electricity balancing.

Another regional initiative, entitled "international Grid Control Cooperation" (iGCC), enables participating TSOs to offset among themselves their frequency restoration reserve needs when they are in the opposite direction, and therefore avoid activation of this reserve with market participants. The iGCC platform was already in operation when RTE joined the cooperation in February 2016. This project's design will be required to evolve in the months following the entry into force of the European guideline on electricity balancing in order to be in compliance with that guideline. Although other cooperations of this type are also in operation currently, the iGCC project has been designated by ENTSO-E as the reference pilot project for implementing Article 22 of the European guideline on electricity balancing and is therefore set to become the European imbalance netting platform imposed by this guideline.

Lastly, other energy exchange projects, currently at a less advanced stage, exist:

- the "EXPLORE" project ("European X-border Project for Long-term Real-time balancing Electricity"), launched early 2015 and which aims to develop exchanges of energy from automatic and manual frequency restoration reserves. It brings together the TSOs from Germany, Austria, Belgium and the Netherlands. A report was published by the TSOs in October 2016²⁵;
- the "MARI" project ("Manually Activated Reserves Initiative") bringing together a great majority of European TSOs²⁶, launched on 5 April 2017²⁷. It aims to develop exchanges of energy from the manual frequency restoration reserve.

At European level, ACER and ENTSO-E are steering the Balancing Stakeholders Group, whose members are market participants, and which contributed significantly to enriching discussions during the drafting phase of the European guideline on electricity balancing. This group is also the forum for the preparation and discussion of cross-cutting elements for the implementation of this guideline.

²² <https://www.entsoe.eu/major-projects/network-code-implementation/cross-border-electricity-balancing-pilot-projects/Pages/default.aspx>.

²³ https://consultations.entsoe.eu/markets/terre/user_uploads/20160307_terre_consultation.pdf.

²⁴ <http://www.cre.fr/documents/deliberations/orientation/projet-terre/consulter-le-document-common-opinion-from-aeggsi-cnmc-cre-elcom-erse-and-ofgem-on-terre-project-design>.

²⁵

https://www.entsoe.eu/Documents/Network%20codes%20documents/Implementation/EXPLORE/20161021_EXPLORE_FRR_TARGET_MODE_L.PDF?Web=1.

²⁶ 50 HERTZ, AΔMHE, AMPRION, APG, ČEPS, ELIA, ENERGINET, FINGRID, NATIONALGRID, RED, REN, RTE, STALNETT, SVENSKA KRAFTNAT, SWISSGRID, TENNET, TRANSNET BW, TERNA RETE ITALIA.

²⁷ <https://clients.rte-france.com/lang/fr/visiteurs/services/actualites.jsp?id=9763&mode=detail>

1.2.3 The European Commission's proposal: "Clean energy for all Europeans"

On 30 November 2016, the European Commission published its proposal entitled "Clean energy for all Europeans". This proposal concerning all energy markets consists of a review of different legislative texts. It was updated and newly published on 27 February 2017. The texts proposed include amended versions of Directive 2009/72/EC²⁸ and of Regulation 714/2009²⁹ which contains in particular new provisions specific to balancing and the participation of demand response.

1.2.3.1 Constitution of balancing reserves

The European Commission's "Clean energy for all Europeans"³⁰ proposal defines the principles of electricity system balancing, and in particular the modalities for procuring balancing reserves (reserve sizing at regional level may be entrusted to regional operational centres (ROCs). This procurement would be:

- facilitated at regional level by the ROCs;
- conducted in the day-ahead and/or intraday timeframe;
- done separately for upward balancing reserves and downward balancing reserves.

CRE recognises the benefits that can be drawn from regional procurement of balancing reserves. However, outside of the frequency containment reserve, which can be exchanged without booking cross-border capacity, the relevance of using such procurement must be analysed in comparison to the cross-border capacity reservation it involves. Such a development in the functioning of electricity interconnections cannot be envisaged without the benefits being quantified. Similarly, CRE recognises the benefits of day-ahead procurement, but considers that at this stage, it is too early to exclude long-term procurement timeframes.

1.2.3.2 Demand response

With regard to demand response, CRE notes that the provisions set out at this stage in the European Commission's "Clean energy for all Europeans" proposal, are favourable to demand response aggregators, in that they provide for, as is the case in France, the possibility of using flexibility sources independently of any agreement with the suppliers of the sites concerned³¹. Recognition of the activity of demand response aggregators independent of the supplier is a major achievement. However, the provisions specified at this stage in the European Commission's proposal call into question the practical modalities of an efficient development model for the demand response activity by independent aggregators. The European Commission's proposal states that "aggregators shall not be required to pay compensation to suppliers or generators", save "exceptionally" where "one market participant induces imbalances to another market participant resulting in a financial cost"³².

However, to compensate for the absence of an agreement with the supplier, the French law specified rules for using demand response with a transfer of energy from the supplier of sites experiencing shifted or curtailed consumption to the demand response operator and a financial flow from the demand response operator to the supplier of the site in question. This flow, termed "contribution", is the compensation for the transfer of energy from the supplier to the demand response operator, so that the latter can sell the consumer's curtailed or shifted energy to RTE or directly in the market. This principle was validated on several occasions by the French constitutional council, the competition authority and the state council. Moreover, CRE highlights that a lack of payment would encourage demand response aggregators to curtail consumption at times that are not efficient for the electricity system, thereby lowering social welfare.

Therefore, CRE is in favour of the European Commission's proposals about the possibility of carrying out demand response without the supplier's agreement, but is opposed to the general principle prohibiting payment for the abovementioned reasons.

²⁸ [http://eur-lex.europa.eu/legal-content/FR/TXT/?qid=1497343367833&uri=CELEX:52016PC0864R\(01\)](http://eur-lex.europa.eu/legal-content/FR/TXT/?qid=1497343367833&uri=CELEX:52016PC0864R(01)).

²⁹ [http://eur-lex.europa.eu/legal-content/FR/TXT/?qid=1497343367833&uri=CELEX:52016PC0861R\(01\)](http://eur-lex.europa.eu/legal-content/FR/TXT/?qid=1497343367833&uri=CELEX:52016PC0861R(01)).

³⁰ Article 5 of the draft Regulation of the European Parliament and of the Council for the internal market in electricity

³¹ Article 17.3 of the draft Regulation of the European Parliament and of the Council concerning the rules for the internal market in electricity

³² Article 17.3 of the draft Regulation of the European Parliament and of the Council concerning the rules for the internal market in electricity

2. ROADMAP PROPOSED BY RTE AND CRE'S GUIDANCE

2.1 SHORT-TERM MARKETS

2.1.1 Context, RTE's proposal and CRE's preliminary analysis

The period after gate closure time is the period during which the TSO may take balancing actions. Currently, RTE, in theory, has an infinite period after gate closure time, but in practical terms it is between one hour and two hours. The length of this period is the result:

- of the one-hour lead time on the one hand³³;
- and on the other hand, a one-hour period between each gate closure time covering a one-hour delivery period³⁴.

The European guideline on electricity balancing, approved on 16 March 2017, forbids any overlapping between the BRPs' actions for balancing their perimeter and the TSO's actions to balance the system³⁵. Therefore, TSOs can only take balancing actions after the intraday cross-border markets have closed. Exceptions are however maintained for congestion management and margin reconstitution.

According to Regulation (EU) No 2015/1222 of the Commission of 24 July 2015 on capacity allocation and congestion management (hereinafter "CACM regulation")³⁶, intraday cross-border markets close at the earliest one hour before real time³⁷.

RTE proposes to define an exclusive window of a duration between 1h and 1h15mins or 1h30mins (depending on the imbalance settlement period of either 15 minutes or 30 minutes):

- by maintaining a one-hour lead time, to enable RTE to continue to apply centralised and proactive balancing management;
- by aligning the number of intraday cross-border gate times with the time period chosen for imbalance settlement, subject to a quantitative analysis, by 2025 at the latest³⁸.

In its preliminary analysis, CRE:

- was in favour of these proposals by RTE;
- proposed to examine in 2017 (for implementation in 2018), the introduction of intraday cross-border gate closure every 30 minutes at the German and Swiss borders, where 30-minute products are already exchanged.

2.1.2 Summary of responses to the public consultation

Several participants would like a lead time as short as possible to have the possibility of balancing their portfolio and countering any contingency as close as possible to real time. In any event, they consider that a one-hour lead time is the maximum.

However, if there is to be no shortening of the lead time, participants are in favour of an increase in the number of intraday cross-border gate closure times, which would therefore shorten the TSO's exclusive window, and enable them to take action as close as possible to real time. In addition, participants expressed their desire to have a liquid intraday cross-border market.

Some participants, including RTE, highlighted that shortening the lead time to less than one hour or increasing the number of intraday cross-border gate closure times was not compatible in the short term with the implementation of the TERRE platform. This could eventually evolve towards operation with gate closure every 30 minutes, compatible with the increase in the number of intraday cross-border gate closure times, also every 30 minutes. Moreover, RTE highlighted in its response that, even without taking into account the implementation of the TERRE platform, an increase in the number of gate closure times would require major developments in its operational processes and information systems which it is not able to implement by the end of 2018.

³³ For example, at 10:00 a.m., BRPs can no longer take any physical action within their perimeter (injections, withdrawals, electricity imports and exports) for the delivery period starting at 11:00 a.m.

³⁴ In the same example, at 10:00 a.m., BRPs can no longer take any balancing action within their perimeter for the delivery period from 11:00 a.m. to noon.

³⁵ Articles 16, 17 and 24 of the European guideline on electricity balancing

³⁶ Article 59 of the CACM regulation

³⁷ i.e. for example at 10:00 a.m. at the earliest for the delivery period starting at 11:00 a.m.

³⁸ The delivery period and the duration of intraday products are aligned with the imbalance settlement period.

2.1.3 CRE's guidance

Market participants are exposed to uncertainties (concerning consumption forecasts, intermittent generation, the contingencies in their production assets, etc.) which may affect their balancing perimeter after gate closure time. Therefore, their request to shorten this period during which they cannot balance their portfolio seems legitimate.

The two means of shortening the period after gate closure time, and their interaction with the current balancing model, are examined below:

- the lead time;
- the period between each gate closure time.

Duration of lead time and the associated balancing model

Analysis

Different balancing models coexist in Europe. The model adopted in France, in comparison to other models, is:

- centralised: close to real time, RTE ensures system balancing with the use of a relatively “long” exclusive window, guaranteeing that its actions are economically efficient; other models, which are more decentralised, leave the responsibility to market participants to balance their perimeter closer to real time, which implies a shorter period after gate closure time;
- proactive: RTE anticipates imbalances expected in the system, using its knowledge of online and available generation resources and its estimate of consumption. Before gate closure time, it may take actions (activation of balancing bids) aimed at sourcing capacity from flexible resources which it can then use after gate closure time; in other “reactive” models, the TSOs activate balancing bids only to respond to an imbalance observed (and not anticipated). To ensure balancing in real time, they therefore prioritise explicit reservation of balancing capacity (reserve procurement). This will be addressed in part 2.2.

CRE considers that a centralised balancing model can ensure optimal short-term resource allocation by enabling a more accurate consideration of the technical and economic characteristics of available flexibility and system features. The TSO in fact has full information about the generation base and the balancing capacity at its disposal, and can globally and accurately optimise the cost of balancing.

By contrast, the benefit of a very decentralised approach, letting market participants balance their perimeter very close to real time is limited by the following: less information from participants about system needs and network characteristics which are not expressed by the mere confrontation between supply and demand at national level. Such an approach therefore could not singlehandedly lead to optimal use of balancing resources, and would require action by the TSO to meet needs not revealed by the market (in this case generating congestion costs in particular).

The choice between a centralised and decentralised model must therefore take account of the benefits expected of European energy and balancing market integration. At this stage, maintaining different balancing models at European level is not an obstacle to energy and balancing market integration, since:

- participants can exchange in the cross-border intraday markets up to one hour before the start of the delivery period (same duration as the lead time), as allowed by the CACM regulation;
- European balancing market integration can cover different perimeters depending on the reserves concerned:
 - European perimeter for frequency restoration reserves (hereinafter “FRR”) which are used by all TSOs, whether proactive or reactive ;
 - regional perimeter for replacement reserves (hereinafter “RR”) for proactive TSOs that cooperate within the framework of the TERRE project.

CRE considers that the centralised and proactive balancing model implemented in France can ensure optimal activation of flexibility sources depending on their technical and economic characteristics and the status of the network, and therefore guarantee optimal short-term allocation of resources. The established efficiency of this model enables RTE to manage balancing under the best cost and safety conditions.

CRE is therefore in favour of maintaining this model, which is based in particular on a one-hour lead time, and on the possibility for the TSO to act before gate closure time to reconstitute available power margins (see part 2.2) or to manage congestion (see part 2.3). It notes that RTE plans to assess the effects associated with switching to a “reactive” model (with an exclusive window that may be reduced to 15/30 minutes) and considers that it would be useful to have quantified elements to compare the proactive and reactive model.

Lastly, CRE considers that, within the framework of a centralised balancing model, greater transparency can send economic signals aimed at encouraging the development of flexibility where it is most needed, and at promoting its availability and mobilisation when it is most useful for the system.

Guidance

CRE is in favour of maintaining the balancing model used in France, characterised in particular by the one-hour lead time proposed by RTE.

CRE agrees that RTE should quantitatively assess, before the second half of 2018, the effects associated with switching to a reactive model, with the possibility of the TSO's exclusive window being shortened to 15/30 minutes.

In addition, CRE requests RTE to improve the transparency of the functioning of the balancing model used in France, and in that regard, lists the data it wishes RTE to publish in part 2.11.

Increase in gate closure times and interaction with the TERRE project

Analysis

One of the options for meeting participants' request to shorten the period during which they cannot balance their perimeter is to increase the frequency of intraday cross-border gate closure times and scheduling process gate closure times, as proposed by RTE in its green paper. The target proposed by RTE consists in aligning, subject to a quantitative analysis, once the deadline expires for switching the imbalance settlement period to 15 minutes, i.e. by 2025 at the latest (see part 2.4.3):

- the imbalance settlement period at 15 minutes;
- the duration of intraday products at 15 minutes;
- the frequency of cross-border intraday gate closure times and scheduling process gate closure times, every 15 minutes.

CRE is in favour of this target, which moreover complies with the provisions of the CACM regulation³⁹. In addition, CRE notes that a compatibility analysis for the smooth running of all processes (scheduling process gate closure times, gate closure times for standard product exchange platforms, implementation of activation orders, etc.) in a 15-minute timeframe will be necessary.

The implementation of intraday cross-border gate closure times and scheduling process gate closure times every 15 minutes would require, beforehand, the implementation of a 15-minute imbalance settlement period and 15-minute intraday products, and therefore could not take place before the completion of such developments, i.e. between 2021 and 2025 (see part 2.4.3). By that time, the provisional implementation of intraday cross-border gate closure times and scheduling process gate closure times every 30 minutes would reduce the period during which participants can no longer balance their portfolio to a maximum of 1h30mins. This solution had been proposed by CRE in its public consultation and was to be examined in 2017 for implementation in 2018.

RTE stated that it was impossible to simultaneously implement this development and the TERRE platform by 2019. The market design adopted for the TERRE project is based on one-hour time steps, at least for the launch of the platform. Switching to intraday cross-border gate closure times and scheduling process gate closure times every 30 minutes would require the TERRE bid selection process to also be conducted every 30 minutes, in order to avoid any overlapping between the intraday markets and the TSO's exclusive window. While the TERRE TSOs have identified the increase in the number of bid selection processes as a target for the project's development in the medium term, the implementation of this process every 30 minutes, and not every hour, would require, as from now, a revamping of both the design of the TERRE project and of the national processes that have a link with this project (gate closure times, selection and transmission of orders, etc.). In particular, certain processes may have to be automated (management of margins and congestions). These elements would therefore involve additional periods of time.

The development of the TERRE platform and the implementation of intraday cross-border gate closure times and scheduling process gate closure times every 30 minutes are two short-term market development objectives. A decision must be made to determine which project will be prioritised for 2019.

³⁹ Article 59 states that the intraday cross-border gate closure times must be defined in relation to the start of the delivery period of each intraday product.

On the one hand, switching to intraday cross-border gate closure times and scheduling process gate closure times every 30 minutes meets participants' request by giving them a longer window for action. In addition, it is a change in market rules that will contribute to increasing liquidity in the cross-border intraday markets.

On the other hand, the TERRE project will enable participating TSOs to continue to use the replacement reserve⁴⁰, and therefore to maintain a proactive model at regional level. Of all the other regional initiatives to implement the European guideline on electricity balancing, this project is the most advanced: it should fuel thought about the implementation of the platform for the exchange of standard products from the frequency restoration reserve. The cost-benefit analysis of the TERRE project also revealed gains estimated at about €110 M per year for exchanges between England, Spain, France, Greece⁴¹, Italy, Portugal and Switzerland. The costs/benefits related to the implementation of intraday cross-border gate closure times and scheduling process gate closure times every 30 minutes have not been estimated at this stage.

This project has also been delayed several times; its initial starting date was set for 2016. In order to maintain the current goal for project launch in the first half of 2019, strong involvement by the TSOs and the national regulatory authorities concerned is essential.

CRE considers that at this stage, it is essential to prioritise the implementation of the TERRE platform, which is the first regional balancing energy exchange project following the principles recommended by the European guideline on electricity balancing, and which will enable the proactive French model to continue to function, while giving the French electricity system access to a pool of standard products of replacement reserve shared by all bordering countries using this reserve.

It is however essential for the TERRE project to ultimately be able to evolve towards a TERRE bid selection process every 30 minutes, which is a prerequisite to the implementation of intraday cross-border gate closure times and scheduling process gate closure times every 30 minutes. CRE therefore wishes for RTE, in cooperation with its TERRE project partners, to examine the implementation of this development.

Guidance

CRE is in favour of the implementation, in the long term, of intraday cross-border gate closure times and scheduling process gate closure times more frequently (15 minutes or 30 minutes) than the current hourly frequency.

In the medium term, CRE prioritises the implementation of the TERRE project by 2019 (with an hourly bid selection process), before subsequently shifting to a TERRE bid selection process every 30 minutes, which will enable the implementation of intraday cross-border gate closure times and scheduling process gate closure times every 30 minutes.

In order to confirm this choice, CRE requests RTE to carry out, by the next TERRE project notification (4th quarter 2017):

- a cost/benefit analysis of the TERRE project, taking into account the effect of bid filtering for purposes related to margins and the network (see parts 2.2.3 and 2.3.3);
- an analysis of the costs/benefits associated with switching to cross-border intraday gate closing times and scheduling process gate closing times every 30 minutes.

CRE invites RTE to involve market participants in the assumptions and modelling decisions that will be made for these studies.

These analyses and the progress of the TERRE project in the fourth quarter of 2017 will contribute to fuelling CRE's position during the elaboration of the common opinion of national regulatory authorities on the TERRE project, scheduled for the end of 2017.

The implementation of intraday cross-border gate closing time and scheduling process gate closure times every 15 minutes shall be examined by the time the deadline for changing the imbalance settlement period is reached, which will have been set following an evaluation conducted by CRE in the second half of 2017 (see part 2.4.3).

⁴⁰ According to the European guideline on electricity balancing, TSOs intending to use manual frequency restoration reserves with an activation time over 15 minutes must develop and use a regional exchange platform for energy offers from this reserve.

⁴¹ As an observer in the TERRE project

2.2 MARGIN MANAGEMENT MODEL AND DIMENSIONING OF RESERVES

2.2.1 Context, RTE's proposal and CRE's preliminary analysis

French safety model

In order to carry out its electricity system balancing mission, RTE makes sure that power reserves are available on the one hand by procurement before real time (see part 2.7), and on the other hand, by dynamic dimensioning of the capacity required for balancing. This model, known as the “margin model”, consists in following and as needs be, reconstituting the available power margins taking into account the risks identified by RTE during the day. In that regard, RTE activates in particular balancing bids, sometimes before gate closure time, in order to have a sufficient volume of power reserves from other generation resources with the flexibility characteristics necessary for management of contingencies very close to real time.

Other TSOs constitute all of the reserves necessary for balancing before the day-ahead timeframe, based on a “reserve model”.

The European guideline on electricity balancing does not make any recommendations as to the reserve constitution model to be used and does not require European harmonisation.

In 2015, RTE entrusted the Microeconomix firm to perform a qualitative study of the “margin model”. This study concluded that the advantages of this model for the French electricity system outweigh its disadvantages.

In its preliminary analysis, CRE proposed:

- maintaining the “margin model”;
- requesting RTE to clarify as from 2017 the interaction between the sharing of standard balancing bids and margin calculation, in order to comply with the goal of sharing all standard balancing bids on exchange platforms;
- reinforcing the transparency of RTE's activations to reconstitute margins and of their impacts on the intraday market;
- non-priority treatment of the changes in the “margin model” proposed by RTE (technological neutrality and bearing of the associated costs).

Scheduling mechanism

The approach used by RTE for balancing, based on joint management of balancing and local congestion, makes it necessary for it to have very precise information on network injection forecasts. RTE therefore has the operating schedule of power-generating units connected to the public transmission network⁴², which is defined the day before at 4:30 p.m. on a half-hourly basis, and can be re-stated up to one hour before delivery.

The same scheduling obligation holds for “non marginal” installations connected to a public distribution system⁴³ with the DSO, which aggregates the schedules received from producers and transmits them to RTE for an appropriate point in the network. Article L. 321-9 of the French energy code, as amended by order No 2016-1059 of 3 August 2016, requires that the installations connected to a public distribution network and participating in the balancing mechanism must forward their tendering schedule directly to the TSO; RTE proposes to implement it as from 2017 (MA-RE v8.3 rules).

The power-generating units connected to the public transmission network are also required to offer their capacity available for the balancing mechanism⁴⁴.

In its green paper, RTE proposed maintaining the scheduling mechanism, as well as improvements to be decided in 2017 and 2018: reduction of the scheduling step of 30 minutes to 5 minutes, extension of the scheduling mechanism to new participants (consumers connected to the public transmission network, suppliers), extension of the obligation to offer available power to the balancing mechanism to other capacity, for example, certain demand response sources.

In its preliminary analysis, CRE considered that these developments related to scheduling (apart from the developments resulting from order No 2016-1059 of 3 August 2016), did not appear to be priorities and invited RTE to

⁴² Article L. 321-9 of the energy code

⁴³ Order of 23 April 2008 relating to the technical specifications for connection to a public distribution network

⁴⁴ Article L. 321-13 of the energy code

examine improvements related to the scheduling mechanism, in particular concerning the methodology for elaborating tendering schedules operating schedules and their time split⁴⁵.

2.2.2 Summary of responses to the public consultation

French safety model

Only three participants are in favour of the elimination of the “margin model” and the constitution of reserves by procurement only; they highlight the absence of an incentive for the TSO to use standard products, and the interaction with intraday markets. One participant requests a quantitative analysis of the efficiency of this model.

The majority of participants therefore do not call into question this model, but request improvements:

- increased transparency of the functioning of this model, with the publication of a greater amount of information (in particular: evaluation of the margins required and observed by RTE, characteristics of the bids filtered or activated for the purpose of margins and congestions) on a regular basis;
- the implementation of a compensation scheme for bids in the merit order list, but which are not activated for the purpose of margins, or whose activation for the purpose of margins could generate a missed opportunity in the integrated balancing markets.

Scheduling mechanism

Most participants are opposed to the developments in the scheduling mechanism proposed by RTE and are therefore in favour of CRE's proposal not to implement them, considering that these developments would cause operational complexity and therefore considerable costs, with benefits that are not certain.

RTE underlines the need to adapt the scheduling mechanism to the new electricity system challenges. It considers that the current mechanism must be strengthened to give the TSO the visibility required to maintain a proactive balancing approach. It considers that it is the performance of the scheduling mechanism that makes the “margin model” and the subsequent economic benefits for the community possible. Therefore, according to RTE, an incomplete scheduling mechanism could ultimately make it impossible for these principles to be maintained.

2.2.3 CRE's guidance

French safety model

Analysis

CRE notes that the “margin model” is one of the fundamentals of the balancing system in France and that such a mechanism is not called into question by the European guideline on electricity balancing. It also notes that this model enables the French TSO to procure a lower volume of reserves in comparison to the size of the country, in comparison to its counterparts.

In addition, maintaining this model does not prevent the development of the energy exchanges provided for by the guideline. CRE however wishes to make sure that this model, apart from its capacity to optimise short-term balancing costs under the best electricity system safety conditions, conveys incentives to participants such that the necessary flexibility will be developed.

Moreover, this model requires, as allowed by the European guideline on electricity balancing, that RTE can:

- on the one hand, activate specific products aimed at reconstituting margins before gate closure time. These bids come mainly from sources that are not very flexible (with long activation times) which therefore cannot be used in the form of standard products in European platforms (activation times lower than or equal to 30 minutes). In this case, the remuneration of these bids can generate an additional cost for the system⁴⁶. In the opposite case, if flexible products can be offered in the form of standard products, in the merit order list of a European platform and priced at marginal price, an action for the purpose of margins (in the form of a specific product) represents a missed opportunity for the participant which is remunerated on the pay-as-bid basis;

⁴⁵ The tendering schedules and operating schedules elaborated by scheduling responsible parties in 30-minute steps could be broken down by RTE into shorter steps.

⁴⁶ Price of the specific bid demanded – marginal price of balancing, if this difference is positive.

- on the other hand, filter flexible standard bids which will not be shared on the European reserve platforms (such as TERRE). If these bids could have been selected in the merit order list on these platforms, this action:
 - can increase the marginal price resulting from the merit order on these platforms and thus increase the balancing costs of the TSOs using these platforms;
 - generate a missed opportunity for participants that make filtered bids which should have been activated in the merit order list on these platforms, and which in addition, might never be activated and remunerated by RTE.

The methodology for calculating margins and filtering bids shall therefore have to be described transparently by RTE as from 2017, when the TERRE project market design is finalised. These elements were presented by RTE within the framework of the consultation in progress concerning the MA-RE v9 rules.

Given the consequences of these actions on the pool of standard bids which will not be shared on the European reserve platforms, CRE considers that it is essential to quantify the volume of bids concerned, its consequences on the energy exchanges that may be conducted on platforms, on the formation of the marginal price for each reserve and therefore on the balancing costs.

In order to consolidate the qualitative analysis of the functioning of the French model presented in the RTE's green paper, CRE therefore requests RTE to provide quantitative elements integrating all of the "margin model" costs. These costs will have to be compared to all of the costs associated with the alternative constitution model, ahead of the day-ahead time-frame, for all of the reserves necessary to ensure balancing (known as the "reserve model"). CRE considers that the benefits related to the "margin model" implemented by RTE could be greater when reserve procurement is done long term (annual or weekly), compared to daily procurement. It therefore requests RTE to distinguish in its analysis the timeframes for the procurement of the reserves considered.

In addition, CRE requests RTE to further evaluate the consequences of the functioning of this model parallel to the operation of intraday cross-border markets. In its green paper, RTE in fact gave a qualitative description⁴⁷ of the inefficient aspects of the "margin model" related to the risk of available margin error when variations in interconnection transmission (imports or exports) occur after the margin evaluation.

Lastly, in its deliberation of 17 November 2016 deciding on the tariffs for the use of a high-voltage public electricity grid ("TURPE 5 HTB tariffs") CRE decided that indicators for following the volumes activated in the balancing mechanism for the purpose of ancillary services and margins would be set up. It considers that the publication of the indicators defined in paragraph 4.8.1 of section 1 of the MA-RE rules in effect as at 1 January 2017 meets this objective (in particular indicators 34 to 37).

Guidance

CRE proposes to maintain the "margin model".

CRE requests RTE, by the time of publication of proposal for the common design of the TERRE project (4th quarter 2017), to describe in detail the methodology for calculating margins and filtering bids which will affect the sharing of standard products on the TERRE platform, and to undertake a quantitative study analysing at least the following elements:

- an estimate of the costs which would be associated with switching from the "margin model" to a "reserve model" in France;
- the volumes concerned, observed in the past and estimated for the future with the implementation of the European guideline on electricity balancing, for:
 - the bids activated for the purpose of margins, and the time of their activation;
 - specific bids blocked in the merit order list for the purpose of margins;
 - the pool of standard bids which would not be shared on the European reserve platforms such as TERRE in order to maintain RTE's margins; these elements shall in particular have to be taken into account in the cost/benefit analysis of the TERRE project (see part 2.1.3);
- the amounts, including past figures and estimates for the future with the implementation of the European guideline on electricity balancing, related:
 - to activations outside the merit order list for the purpose of margins;

⁴⁷ Chapter 7.1.2.3 of the green paper

- to the effects on the marginal balancing price of filtering balancing bids for the purpose of margins, and the associated amounts (pricing of all balancing bids at a potentially higher price);
- to the missed opportunity for bids blocked in the merit order list for the purpose of margins, in particular for standard bids which would have been activated on European reserve platforms such as TERRE;
- if applicable, the missed opportunity for specific bids activated for the purpose of margins and priced at the bid price, but which could have been used in the form of standard bids in European reserve platforms such as TERRE, and priced at the marginal price.

CRE invites RTE to involve market participants in the assumptions and modelling decisions that will be used for all of these studies.

Depending on the results of these studies, CRE may be required to make development decisions late 2017/early 2018 concerning the “margin model”, related in particular to a compensation scheme for standard bids not transmitted to the platforms and which should have been activated in the merit order list.

CRE requests RTE to improve the transparency of the functioning of the “margin model” model, and in that regard, lists the data it wishes RTE to publish in part 2.11.

Scheduling mechanism

Analysis

CRE considers, following the public consultation, that significant developments in the scheduling mechanism do not seem to be a priority, with the exception of the implementation of Order no 2016-1059 of 3 August 2016.

It notes that scheduling steps should ultimately be brought in line with the development of the imbalance settlement period when it is changed to 15 minutes (see part 2.4.3). Until then, the constraints associated with the implementation of a short 5-minute scheduling step appear complex, and participants would have no incentive to declare different values for a shorter period than for the current period. Therefore, the solution favoured by CRE consists in enabling RTE to apply a time step for operating and tendering processes in line with the implementation of the TERRE project (5 minutes if relevant) without imposing upon participants to make their declarations following this time step.

As regards the extension of the scheduling mechanism to new capacity (consumers connected to the public transmission network, suppliers), CRE considers that this cannot be imposed without a binding legal framework. However, the implementation of new methods for verifying actual volumes of demand response participating in the balancing mechanism and in the block exchange notification mechanism (“NEBEF”), such as the consumption forecast method, will give rise to the transmission of information about consumption forecasts for entities voluntarily concerned.

Concerning the obligation to offer available power, the European guideline on electricity balancing⁴⁸ enables the TSO to impose, in the MA-RE rules, mandatory provision by balancing service providers of their available power production and their other balancing resources, if it is justified. The current legal framework in France⁴⁹ already structures this obligation for power-generating units connected to the public transmission network. CRE considers that this mandatory provision cannot be imposed upon capacity which is not naturally available (such as demand curtailments) and which emerge thanks to contract-based remuneration, as for the manual frequency restoration reserve and the replacement reserve.

Guidance

CRE is in favour of maintaining the scheduling mechanism and the implementation of order No 2016-1059 of 3 August 2016 related to the transmission of the tendering processes for installations connected to a public distribution network, as from 2017 (MA-RE rules v8.3).

CRE requests RTE to examine:

- in 2017/2018 (MA-RE v9 rules, for implementation as at the start of TERRE), improvements related to the scheduling mechanism, such as the time split for tendering and operating processes, in order to make it compatible with the implementation of the TERRE project. The improvements shall have to be implemented after consultation with market participants, and shall not generate any additional heavy constraints for participants;

⁴⁸ Articles 18 (7) and (c) of the European guideline on electricity balancing

⁴⁹ Article L. 321-13 of the energy code

- by 2020/2021, a development in the scheduling step to bring it in line with the imbalance settlement period.

2.3 COORDINATION BETWEEN BALANCING AND NETWORK CONGESTION MANAGEMENT

2.3.1 Context, RTE's proposal and CRE's preliminary analysis

RTE manages in a joint and coordinated manner, on the one hand, balancing between production and consumption, and on the other hand, management of network congestion and local congestion. The mechanism is not segmented according to use, and when RTE activates a bid to balance the system, it simultaneously analyses its impact on the network.

RTE wishes to maintain these principles and proposes to adapt them to the framework for sharing balancing energy bids on European reserve platforms, in particular, through the definition of a process that will limit the activation of bids generating constraints, at different stages in the European process for standard product sharing.

In addition, energy transition and the development of flexibility connected to a public distribution network raise the question of the coordination of such flexibility between RTE and the DSOs, with a view to (i) handling any conflicts of use and (ii) using this flexibility for any kind of need (public distribution network but also balancing and public transmission network) without segmenting it.

In its preliminary analysis, CRE proposed:

- maintaining the coordinated management of balancing and congestion management;
- requesting RTE to clarify as from 2017 the interaction between the priority use of standard balancing bids and this coordinated management based on specific products;
- the study of the implementation of financial compensation for bids not activated for the purpose of congestion, as from 2017;
- the examination, as from 2018, of the coordinated management of flexibility connected to a public distribution network between system operators.

2.3.2 Summary of responses to the public consultation

Participants are mostly in favour of maintaining the integrated management of balancing and congestion management. They however request additional developments to this model, similar to those requested for the "margin model":

- greater transparency in the actions taken by the TSO when it filters or activates bids for the purpose of the network;
- the implementation of a compensation scheme for bids which are in the merit order list, but are not activated for the purpose of the network.

With regard to this last point, two participants however highlight the need for safeguards for single site bid units⁵⁰ located in a congested zone, which would be encouraged to systematically make bids in order to receive compensation without being activated.

Moreover, one participant considers that congestion costs are currently masked since filtering of bids for the purpose of congestion can affect the merit order.

Most participants also recalled that congestion costs must not be borne by BRPs.

The DSOs wish to prioritise the consideration of DSOs' constraints, when the TSO activates flexibility connected to a public distribution network. In their opinion, the activation by the DSOs of such flexibility via the balancing mechanism is premature: local flexibility service experiments provided for by the energy transition act should be favoured.

2.3.3 CRE's guidance

Analysis

⁵⁰ See part 2.8

CRE notes that the integrated network congestion management model is one of the fundamentals of electricity system management in France and that such a mechanism is not called into question by the European guideline on electricity balancing. In addition, maintaining this model does not prevent the implementation of the guideline and in particular the development of energy exchanges.

However, this model requires, as allowed by the guideline, that RTE be able:

- on the one hand, to activate before gate closure time specific products aimed at lifting congestion, by possibly contracting flexibility ahead of the day-ahead timeframe. If such products could have been offered in the form of standard products, in the merit order list of a European platform and priced at marginal price, this action would represent a missed opportunity for the participant which is priced on the pay-as-bid basis, and could increase the marginal price formed by the platform. If such products are outside the merit order list, their remuneration generates an additional cost for the system⁵¹;
- on the other hand, to block balancing energy bids, in the form of standard or specific products, before, or in cases of last resort, after they are transmitted to European reserve platforms (such as TERRE). In that regard, CRE very much welcomed RTE's proposal clarifying the process to limit the activation of bids generating constraints in the network. These actions:
 - can increase the marginal price resulting from the merit order list on these platforms and thus increase the balancing costs of TSOs using these platforms;
 - generate a missed opportunity for participants that made filtered bids which should have been activated in the merit order list on these platforms.

This model therefore has consequences of the pool of standard bids that will not be shared on the European reserve platforms. CRE considers that it is essential to quantify the volume of bids concerned, its consequences on the balancing exchanges that may be conducted on platforms, on the formation of the marginal price for each reserve and therefore on balancing costs.

As regards the implementation of the compensation scheme for bids blocked in the merit order list for the purpose of the network, CRE considers that this topic must be examined thoroughly, in particular to avoid windfall effects for bids from a single site systematically generating congestion.

In addition, RTE must ensure sufficient transparency in the integrated management of balancing and congestion, in order to guarantee that this model conveys the economic signals required for the development of flexibility where it is most useful. In that regard, RTE proposes to communicate about recurrent and/or structural congestion. This communication could take the form of a map identifying the geographical zones that are most relevant for flexibility aggregation.

Lastly, CRE considers that the matter of the interaction between public transmission network and public distribution network for the management of balancing mechanisms has specific importance within the framework of energy transition. Two issues shall have to be examined as from 2018/2019 (MA-RE v10 rules):

- coordination between TSO and DSO when the TSO activates bids, for public transmission network needs (balancing or congestion) of flexibility sources connected to a public distribution network. Since 2005, capacity connected to a public distribution network has progressively been integrated into balancing, and is now a common type of activation. Ultimately, broader participation of local flexibility sources in the electricity system could generate constraints on the public distribution network and will require the setting up of appropriate mechanisms to handle such constraints;
- the possible contribution of local flexibility services, based on the experiments allowed by Article 199 of the energy transition act, to balancing needs, and the specific modalities for the integration of such capacity in national balancing mechanisms.

Guidance

CRE proposes to maintain the integrated network congestion management model and the use of a single pool of bids, while ensuring that this model conveys the economic signals required for the development of flexibility where it is necessary. In that regard, CRE requests RTE to inform about recurrent and/or structural congestion in its network, for example, in the form of a map identifying the most relevant geographical zones for flexibility aggregation.

CRE requests RTE to conduct, by the time the common TERRE project design is proposed (4th quarter 2017), a quantitative assessment analysing at least the following elements:

⁵¹ Price of the specific bid demanded – marginal price of balancing, if this difference is positive.



- the volumes concerned, observed in the past and estimated for the future with the implementation of the European guideline on electricity balancing, for:
 - the bids activated for the purpose of the network, and the time of their activation;
 - specific bids blocked in the merit order list for the purpose of the network;
 - the pool of standard bids which would not be shared on the European reserve platforms such as TERRE so that RTE could continue to manage network congestion; these elements shall have to be taken into account in particular in the cost/benefit analysis of the TERRE project (see part 2.1.3);
- the amounts, including past figures and estimates for the future with the implementation of the European guideline on electricity balancing, related to:
 - activations outside the merit order list for the purpose of the network and the costs of contracts concluded before the day-ahead timeframe;
 - the effects on the marginal balancing price of filtering of balancing bids for the purpose of congestion, and the associated amounts (remuneration of all balancing bids at a potentially higher price);
 - the missed opportunity for bids blocked in the merit order list for the purpose of the network, in particular for standard bids which would have been activated on European reserve platforms such as TERRE;
 - the missed opportunity for specific bids activated for the purpose of the network and priced at the bid price, but which could have been used in the form of standard bids in European reserve platforms such as TERRE, and priced at the marginal price.

CRE invites RTE to involve market participants in the assumptions and modelling decisions that will be used for all of these studies.

Depending on the results of these studies, CRE may be required to make development decisions late 2017/early 2018 concerning the integrated congestion management model, regarding in particular a compensation scheme for standard bids not transmitted to the platforms and which should have been activated in the merit order list.

CRE requests RTE to improve transparency in the functioning of the integrated network congestion management model, and in that regard, lists the data it wishes RTE to publish in part 2.11.

In addition, CRE requests RTE and the DSOs to examine as from 2018/2019 (MA-RE v10 rules) the matter of coordinated management between system operators of flexibility connected to a public distribution system.

2.4 BRP ROLE, INCENTIVES AND INSTRUMENTS

2.4.1 Context, RTE's proposal and CRE's preliminary analysis

Balancing responsible parties (hereinafter BRPs) have a major role to play to control electricity system balancing costs, in particular in a context of increasing needs for flexibility in the electricity system as a whole. In that regard, they should have more instruments but also greater incentives to balance their perimeter. Part of the developments necessary for that purpose is made possible by the introduction of smart meters. These will, in particular:

- shorten the timeframe for flow reconstitution processes when they are maintained;
- for the BRPs, improve their knowledge about the consumption of their portfolio, and therefore improve their consumption forecasts.

With regard to BRP incentive, RTE proposed in its green paper to maintain the method of setting the imbalance settlement price⁵² entered into effect as at 3 April 2017 and to switch to an imbalance settlement period of 15 minutes by the latest deadline allowed by the European guideline on electricity balancing. Since the publication of the green paper, the possibility of an exemption until 1 January 2025 (which did not exist previously) has been introduced in the guideline⁵³. In addition, Article 52 of this guideline requires harmonisation at European level of the imbalance settlement methods implemented by the TSOs and preferential use of a single imbalance settlement price.

Concerning profiling and reconstitution of flows, RTE introduced several proposals aimed at integrating new possibilities offered by smart meters and using them to convey individual incentives to BRPs to balance.

In its preliminary analysis, CRE proposed:

- implementing a 15-minute imbalance settlement period by the latest possible deadline;
- examining in 2018 the elimination of the “k factor” and the definition of an imbalance settlement price with greater incentive for implementation, as the case may be, as at 1 January 2020;
- developing the profiling system and the flow reconstitution processes in line with the other developments proposed in the balancing roadmap.

2.4.2 Summary of responses to the public consultation

Most participants are in favour of the implementation of an imbalance settlement period of 15 minutes by the latest possible deadline. However, two participants are in favour of a quick implementation of this development and many participants highlighted that its implementation schedule should be examined objectively, taking into account several factors including:

- the approaches envisaged by the neighbouring countries to implement a 15-minute imbalance settlement period;
- the timeframe necessary for information system developments for all participants;
- the schedule for the introduction of 15-minute products in the markets.

Most participants are in favour of the elimination of the k factor in order to define a single “pure” imbalance settlement price. Several participants did not wish to give their opinion on this matter before knowing specifically the mechanism that would be set up to ensure the neutrality of the balancing/imbalance adjustment account. One participant wished to have feedback on the new imbalance settlement price before considering any new changes.

Most participants are also in favour of the examination of a switch to an imbalance settlement price with a greater incentive, perhaps equal to the marginal price (and not the weighted average price) of the marginal prices of the reserves activated. For certain participants, this position however seems to be contingent upon the settlement by balancing service providers based on this same price. This development however was not proposed either by CRE or by RTE.

All participants wish for the imbalance calculation process to be faster. However, participants had more mixed opinions about profiling and reconstitution of flows. Most suppliers operating in the residential market are in favour of the forecasting method implemented in the current profiling system while recognising the value of improving profiles, in particular via dynamic profiling. Suppliers operating at the high end of the portfolio are in favour of the elimination of profiling for at least this type of consumer.

⁵² With an underlying based on the average price of the bids activated regardless of the direction of the BRP's imbalance (single imbalance settlement price), and a correction factor to cover costs that cannot be attributed individually to the BRPs, the “k factor”).

⁵³ Articles 62 (9) of the European guideline on electricity balancing

2.4.3 CRE's guidance

Imbalance settlement period and price

Analysis

The study conducted by ENTSO-E⁵⁴ concluded that benefits at European level of a switch to a 15-minute imbalance settlement period would be lower than the costs in most scenarios and at best, slightly higher in certain scenarios. However, for France, the result would be beneficial in most scenarios. In addition, switching to a 15-minute imbalance settlement period is an obligation required by the European guideline on electricity balancing. However, given the possibility of an exemption until 1 January 2025 for the implementation of the switch to 15 minutes, in the second quarter of 2017, CRE shall conduct a study to determine the most suitable implementation schedule. This schedule will take into account, in particular, the constraints and costs to develop the information systems of market participants and system operators. Therefore, it appears at this stage that a period of at least three years will be necessary before any development. Participants shall be invited to participate actively in this study.

CRE considers that maintaining the k factor does not allow the full implementation of a single imbalance settlement price and is in favour of the examination of its elimination within the framework of the proposal for European harmonisation, required by Article 52 of the European guideline on electricity balancing, which the European TSOs shall have to develop by 2019 and implement by 2021. On the other hand, CRE considers that imbalance settlement price calculation shall have to be examined thoroughly. In particular, in order to convey greater incentives to BSPs to balance, the imbalance settlement price could be set at the marginal price of the activated reserve prices⁵⁵ with balancing service providers continuing to be remunerated at the price of the reserve for which they have been activated (see part 2.6.3). Such a development would be, if applied, accompanied by the implementation of a mechanism to ensure the financial neutrality of RTE vis-à-vis its balancing activities, in compliance with Article 44 of the European guideline on electricity balancing. This matter may also be examined in 2019 within the framework of the harmonisation proposal.

On the other hand, CRE notes RTE's intention, expressed during the Market Access Commission of 21 April 2017, to carry out work as from the second quarter of 2017 on market functioning during tight supply/demand situations in the electricity system. This work will address in particular, the responsibility of BRPs and the treatment of imbalances in cases where the TSO uses exceptional balancing measures (interruptibility, drop in voltage, shedding, etc.). The current imbalance settlement framework does not take into account the activation of such measures. In particular:

- the cost for the community of shedding is not included in the imbalance settlement price. In the current framework, the imbalance settlement price can, paradoxically, even drop in the event of shedding;
- shedding activated by RTE lowers the consumption of the BRPs concerned, reducing, or even inverting the imbalance in this case.

CRE considers that the imbalance settlement price level should progressively increase in order to reflect supply/demand tightness in the electricity system. More specifically, in the event of shedding, since this situation corresponds to an extreme level of tightness in the electricity system, CRE considers that it is necessary to examine raising the imbalance settlement price to a level that RTE's work will serve to determine. On the other hand, CRE considers that a methodology shall have to be developed so that the calculation of BSP imbalances takes into account the volume of shedding for each perimeter. In addition, a portion of these provisions shall have to be defined within the framework of the implementation of the "*Emergency and Restoration*" network code⁵⁶.

Guidance

CRE shall conduct a study in the second quarter of 2017 to determine the most appropriate schedule for switching to a 15-minute imbalance settlement period. This development could occur as from 2021, and by 2025 at the latest.

CRE requests RTE to examine in 2019 the elimination of the k factor and the definition of an imbalance settlement price with a greater incentive for possible implementation by 2021 at the latest.

Lastly, the setting up of an imbalance settlement system taking into account the activation of exceptional measures by RTE shall be examined in 2017 for implementation possibly in 2019.

⁵⁴ See Annex

⁵⁵ The examination of this matter can determine whether an interim situation (partial marginal price of the prices of activated reserves) is more appropriate.

⁵⁶ <http://ec.europa.eu/energy/en/topics/wholesale-market/electricity-network-codes>.

Profiling developments

Analysis

Because of the lack of information technically available, consumption of sites without a load curve is estimated using the profiling method. Profile-based consumption represents more than half of national consumption.

As with any statistical method, profiling leads to forecast errors in between two meter readings. The introduction of smart meters, which enable the use of more frequently read meter indexes or the use of load curves for the reconstitution of flows, as well as the development of more varied supply offers, bring new perspectives.

The rules relating to profiling and flow reconstitution result in the sharing, to a great extent, of the form of the load curve among sites with profiles, but also between sites with profiles and DSO losses. This sharing facilitates the forecasting of profile-based consumption assigned to a BRP, which must forecast only elements related to national consumption (temperature and national calibration factor) and not to its own perimeter.

In addition, only meter index readings strictly before the consumption period considered are used to estimate consumption of clients with load profiles during the “imbalance” process, for which the BRP is encouraged to balance. The “*imbalance settlement*” phase, which is more accurate, uses meter index readings from either before or after the consumption period in question. It however has less of an incentive for BRPs, since the imbalances calculated during this stage are settled at the spot price and not at the imbalance settlement price. The current rules therefore do not entice BRPs to balance their perimeter based on the estimate of the consumption of their clients with load profiles in the “imbalance settlement” phase, which is however more precise. CRE therefore considers that the “imbalance settlement” phase must also be settled at the imbalance settlement price.

Moreover, the use of national profiles could also cause unjustified transfers, between two suppliers proposing offers with the same structure, therefore allocated to the same profile, but whose clients would have different behaviours (for example, due to the tariff factors more or less accentuating the differences between time periods). Lastly, it does not take into account actions to control peak demand carried out by a supplier which takes advantage of energy efficiency incentives or demand control support services, above and beyond its tariff incentives alone.

Once a sufficient number of smart meters have been rolled out, they will enable the consumption of a group of users to be estimated based on the measurement of the consumption of a statistical panel representative of this group. This method, developed by Enedis, leads to the elaboration of “dynamic” profiles by user group, as opposed to “static” profiles currently used (defined several months to several months beforehand). “Dynamic” profiles are established after real time based on a representative panel of load curves measured. They therefore take into account all of the effects that cannot be reflected accurately by “static” profiles, which, by nature, can only reflect the periodic nature of consumption and a linear sensitivity of consumption to temperatures. “Dynamic” profiles shall therefore enable more accurate estimates of the consumption of load-profiled sites, thereby encouraging BRPs to balance their perimeter based on their clients’ actual consumption.

Moreover, “dynamic” profiles could be different for each tariff offer of each BRP, to accurately reflect the consumption characteristics of a given group of users and any actions to control peak demand conducted by the BRP.

CRE considers that if such a treatment lowered these users’ contribution to overall profiling error, they could possibly be exonerated from the national calibration factor. It therefore requests Enedis to propose to all participants that so request, a dynamic profiling specific to its tariff offer, free of charge, and to examine the relevance of not subjecting BRPs accepting dynamic profiling per tariff offer to the national calibration factor.

Lastly, in order to provide BRPs with information closer to real time to enable them to adapt their forecasts, CRE considers that the “imbalance” process could be conducted more quickly: an initial calculation could be communicated to the BRP one week after real time instead of the current three weeks.

Guidance

CRE requests RTE to develop the rules of the BRP mechanism, so that all imbalances are settled at the imbalance settlement price and not the spot price. CRE therefore requests RTE to propose a schedule for the implementation of this measure, in consultation with participants. In any case, the settlement of all imbalances at the imbalance settlement price shall take place at the latest, for the consumption period starting 1 July 2018.

In order to enable BRPs to adapt their imbalance forecasts as close as possible to real time, CRE requests RTE and the DSOs to carry out the initial BRP imbalance calculation one week after real time instead of the current three weeks, by 2019 at the latest. It requests RTE to examine ways of simplifying procedures for the publication of data necessary to calculate imbalances by DSOs serving fewer than 100,000 clients.

In its deliberation of 2 March 2017 approving section 2 of the MA-RE rules⁵⁷, CRE recommended that Enedis examine, within the framework of consultation groups:

- generalised treatment of flow reconstitution based on load curves, for users connected to the low-voltage network above 36 kVA and the medium-voltage network;
- the schedule and the modalities for implementing “dynamic” profiling during the two flow reconstitution stages (“imbalances” and “imbalance settlement” processes).

These recommendations were supported by certain participants and are in line with a move towards greater BRP accountability. CRE therefore requests Enedis to draw up, with stakeholders, a proposal for a schedule and the modalities for:

- implementation of “dynamic” profiling,
- generalised flow reconstitution based on load curves for the low voltage > 36 kVA and medium-voltage domains.

Enedis shall transmit this proposal to CRE within six months following the publication of the present deliberation; the schedule may possibly specify staggered generalisation, by power level.

Lastly, CRE requests Enedis to examine, by early 2019, the possibility of proposing to BRPs the reconstitution of their clients' consumption based on “dynamic” profiles established using a panel of their own clients, for each of their tariff offers. This mode of reconstitution could give rise to an exoneration of the national calibration factor, since such a reconstitution mode could reduce these users' contribution to the national profiling imbalance.

⁵⁷ Deliberation of the Energy Regulatory Commission of 2 March 2017 approving section 2 of the rules relating to scheduling, the balancing mechanism and the balancing responsible party mechanism: <http://www.cre.fr/documents/deliberations/approbation/responsable-d-equilibre2>.

2.5 CHARACTERISTICS OF STANDARD PRODUCTS

2.5.1 Context, RTE's proposal and CRE's preliminary analysis

Balancing bids are currently not standardised in France: the French balancing mechanism is based on bids with heterogeneous characteristics, via, on the one hand, an implicit system for power-generating units connected to the public transmission system⁵⁸, and on the other hand, explicit bids formulated freely by balancing service providers.

The European guideline on electricity balancing bases European balancing market integration on the standardisation of products exchanges and therefore recommends:

- the establishment of standard products by TSOs, which can be revised every two years⁵⁹. The TSOs may continue to use specific products, but shall be encouraged to limit their use: in particular they shall have to justify the use of these products every two years⁶⁰;
- the implementation of three European platforms⁶¹, one for each process (automatic frequency restoration reserve, manual frequency restoration reserve and replacement reserve) enabling the TSOs to exchange these standard products.

France participates actively in the work to establish these platforms (see part 1.2.2.2), including:

- the TERRE platform for the exchange of a single product of replacement reserve with a 30-minute activation time. This initiative is in anticipation of the requirement of the European guideline on electricity balancing for the implementation of such a platform 24 months at the latest following the entry into force of that guideline;
- the MARI platform for the exchange of a standard product of manual frequency restoration reserve with an activation time of less than 15 minutes. This initiative is in anticipation of the requirement of the European guideline on electricity balancing for the implementation of such a platform 48 months at the latest following the entry into force of that guideline.

In its green paper, RTE proposed that a single standard product be defined for each balancing reserve. Balancing service providers would have incentive to provide manual frequency restoration reserves with a power profile identical to that of day-ahead and intraday products exchanged at borders by TSOs, i.e. based on trapezoids⁶².

The European guideline on electricity balancing recommends that standard bids of automatic frequency restoration reserve be activated based on the merit order list⁶³. RTE proposes to examine, as from 2017, the implementation, as of the first quarter of 2020 in France, of the activation of the automatic frequency restoration reserve based on merit order. Within the framework of the definition of the standard product of automatic frequency restoration reserve, RTE also proposed to examine the feasibility of switching to an activation time of 300 seconds or 450 seconds⁶⁴, which are the two main activation times in Europe⁶⁵.

In its preliminary analysis, CRE:

- highlighted the importance of ensuring consistency between French and European work concerning standard products;
- expressed its support for the definition of a target form for manual standard products and for European harmonisation, to the extent possible, of the main financial incentives associated with this form;
- supported RTE's proposal to select automatic frequency restoration reserve bids based on the merit order list, at national or regional level;
- supported the priority use of standard products, together with the use of specific products in a controlled manner.

⁵⁸ The generation units connected to the public transmission network are also required to offer their capacity available to the balancing mechanism.

⁵⁹ Articles 25 of the European guideline on electricity balancing

⁶⁰ Article 26 (2) of the European guideline on electricity balancing

⁶¹ Articles 19, 20 and 21 of the European guideline on electricity balancing

⁶² With 10-minute ramps overlapping the start and the end of an imbalance settlement period

⁶³ Article 21 (2) of the European guideline on electricity balancing

⁶⁴ The current activation time for the automatic frequency restoration reserve in France is 400 seconds.

⁶⁵ See page 39 of the study carried out for ENTSO-E "Impact of Merit Order activation of automatic Frequency Restoration Reserves and harmonised Full Activation Time", 29 February 2016:

[https://www.entsoe.eu/Documents/MC%20documents/balancing_ancillary/160229_Report_aFRR_study_merit_order_and_harmonising_FAT_\(vs_1.2\).pdf](https://www.entsoe.eu/Documents/MC%20documents/balancing_ancillary/160229_Report_aFRR_study_merit_order_and_harmonising_FAT_(vs_1.2).pdf)

2.5.2 Summary of responses to the public consultation

Participants are in favour of the use of a limited number of standard products for each type of reserve. Several of them however expressed concerns about the definition of those products, and requested to maintain the use of specific products so as to not lower their entities' participation in the balancing mechanism.

Many participants are in favour of an identical form for standard products exchanged by the TSOs and for the products that balancing service providers shall be encouraged to deliver locally, which will contribute to equal treatment among European participants. However, participants expressed concerns about the form requested as well as the technical characteristics (activation time, minimum bid duration, etc.) of standard products, which will have an impact of the pool of bids. Five participants provided a quantified estimate of the impact on the pool of bids in their portfolio of a switch to standard products for the manual frequency restoration reserve. One participant noted in particular that the constraint of a minimum delivery period envisaged for the standard energy product of manual frequency restoration reserve could limit the pool of bids from hydropower available for this reserve.

Lastly, the proposal to select automatic frequency restoration reserves based on the merit order list at national or regional level, before the implementation of the European platform for the exchange of standard products of automatic frequency restoration reserve scheduled for 2022, was commended by participants.

2.5.3 CRE's guidance

Standard products

Analysis

There is currently a wide range of products offered in the balancing mechanism. CRE considers that the standard product is the best means of integrating European balancing markets. It will enable exchanges based on a level playing field for all participants, but without forcing TSOs to standardise their balancing processes. CRE considers that these products shall have to be prioritised for system balancing by the TSO.

The definition of a standard product implies common technical criteria (implementation time, minimum and maximum delivery period, etc.) for all European participants. The definition of several standard products for each type of reserve could facilitate the participation of more capacity in a given reserve, but would be more complex in terms of bid activation and selection between the different associated common merit order lists. In addition, CRE considers that defining a very limited number of standard products, or even a single standard product for each type of reserve, will enable liquidity to be concentrated in European platforms.

Moreover, it is essential to ensure consistency between French and European work concerning standard products, in particular, regarding the definition of standard products for each process and the sequencing of these products. European participants were recently invited to express their views within the framework of a survey conducted by ENTSO-E (in May 2017) on the definition of standard products of automatic frequency restoration reserve (hereinafter aFRR), of manual frequency restoration reserve (hereinafter mFRR) and of replacement reserve (hereinafter RR).

Guidance

CRE is in favour of the definition of a single standard product for each type of reserve, and their prioritised use.

CRE requests RTE to continue to participate actively in European work to define standard products and the characteristics of European platforms.

CRE invites French participants to take part actively in this work at European level, in particular, via the *Balancing Stakeholders Group*, which is the European balancing consultation group.

Standard products and European RR and mFRR platforms

Analysis

CRE notes that RTE wishes to carry out cross-border exchanges of manual trapezoid standard products with 10-minute ramps, identical to the product exchanged physically by the TSOs⁶⁶ in the day-ahead and intraday timeframes. RTE wishes for balancing service providers to deliver it the same form of product, which will have an impact on:

- the “*DOmin*”⁶⁷, “*DOmax*”⁶⁸ and the activation time of products⁶⁹;
- the conditions surrounding competition between European balancing service providers, depending on the financial incentives to deliver trapezoid products, which would be defined at national level by each TSO.

CRE's public consultation highlighted the characteristics envisaged for standard mFRR products and standard RR products (*DOmin*, *DOmax*, activation time). The product requested of French balancing service providers, in the form of trapezoids, will contribute, in particular, to avoiding adjustment imbalances for the TSO. However, participants could have technical difficulties in proving a product with this characteristic. These participants would then have to include an additional cost in the price of their bids (in anticipation of adjustment imbalances), which could increase to total cost of the bids selected (see part 2.6.3). The magnitude of this extra cost shall have to be analysed, so that it can reflect a compromise between the quality of the incentive conveyed to participants and the impact on participants' pricing strategy. In order to develop the pool of standard French products, it is essential that the financial incentives for providing the target product form:

- do not dissuade participants from providing such products;
- do not impose disproportionate constraints on French balancing service providers compared to their European competitors (see part 2.6.3).

With regard to the standard mFRR product, CRE noted in its preliminary analysis that the current definition of the product requires a delivery period not exceeding 20 minutes. CRE requests RTE to continue to work, with its European partners and in consultation with market participants, on the characteristics of this product. In particular, the interaction between the constraint of the maximum delivery period duration of the standard product proposed by the TSOs and the technical constraints in the functioning of the French hydraulic sector (minimum delivery period duration greater than 30 minutes) could be given specific attention. In addition, the financial incentives to deliver a power profile (a given volume of energy) can structurally change the characteristics of the product exchanged. CRE requests RTE, in cooperation with its counterparts, to be as precise as possible during consultations on the market design of energy exchange platforms and standard products.

Lastly, CRE is in favour of the work conducted by RTE to anticipate the development of mFRR energy exchange platforms (TERRE and MARI). For these two projects, CRE requests RTE to continue to cooperate with its European counterparts to develop, in consultation with market participants, a market design for mFRR energy exchange platforms meeting the requirements of the European guideline on electricity balancing.

Guidance

CRE considers that the form of standard products must represent a compromise between meeting electricity system balancing needs and maximising volumes offered by participants. It requests RTE to continue, with its counterparts, work to define and consult with market participants regarding the characteristics of these products. If the TSOs define a specific power profile (e.g. trapezoid), the characteristics of mFRR energy products (in particular, activation time, minimum and maximum delivery period duration) shall have to explicitly reflect this profile.

CRE requests RTE to make sure that the financial incentives set up to encourage balancing service providers to provide the target power profile of standard products:

- do not dissuade participants from providing such products;
- do not impose disproportionate constraints on French balancing service providers compared to their European competitors (see part 2.6.3).

⁶⁶ In the day-ahead and intraday markets, products exchanged financially are rectangular blocks but the products scheduled at interconnections by TSOs are systematically trapezoids with 10-minute ramps.

⁶⁷ Minimum delivery period, i.e. the length of time during which an activated bid cannot be deactivated

⁶⁸ Maximum delivery period, i.e. length of time after which an activated bid must be deactivated

⁶⁹ For the TERRE product, the *DOmin* would be for example reduced to 5 minutes and the *DOmax* to 50 minutes. For the mFRR product which will be exchanged on the corresponding platform, the above-mentioned constraints would imply that the delivery period (DO) of the product is between 5 minutes and 20 minutes.

CRE welcomes the work conducted by RTE to anticipate the development of mFRR energy exchange platforms (TERRE and MARI) and requests RTE to continue to cooperate with its European counterparts to develop, in consultation with market participants, a market design for mFRR energy exchange platforms meeting the requirements of the European guideline on electricity balancing.

Standard products and the aFRR European platform, merit order activation

Analysis

Facilities with power greater than or equal to 120 MW must participate in the aFRR and be able to react to the signal with an activation time of 400 seconds (following a continuous signal sent by RTE to these facilities⁷⁰). In emergency situations⁷¹, these facilities shall have to follow the instruction sent by RTE in 66 seconds (emergency ramping): this is used 20 times per year on average. The aFRR is activated at the same time for all capacity, and the volume activated is distributed among these capacities in proportion to the power reserved.

Currently, participation in the aFRR is heavily dominated by the incumbent operator.

The implementation of a European aFRR platform 48 months following the entry into force of the European guideline on electricity balancing⁷² will involve the definition of at least one standard aFRR product, and therefore the harmonisation of the activation time for this product. However, in Europe, this activation time varies according to the country: TSOs generally impose an activation time close to either 300 seconds or to 450 seconds. European harmonisation could therefore lead to the modification of the activation time of the French aFRR. This modification would have a non-negligible effect on the pool of bids if a shorter activation time is requested of participants, while a longer activation time could have an impact on the quality of frequency. CRE is in favour of RTE's proposal to examine the impact on system frequency of the switch to a 450-second activation time taking into account the effects of merit order activation. The elimination of the emergency ramping constraint could be examined in order to limit the loss of bids resulting from the possible shortening of the activation time, or also in order to increase the volume of bids made available in the market, subject to the analysis of the impacts on the system. CRE therefore requests RTE to examine, in consultation with participants, the impacts of an elimination of emergency ramping for the system, taking into account the consequences on the management of the electricity system and the assessment of the additional pool of bids.

In addition, merit order activation of the standard bids of this reserve, as provided for by the European guideline on electricity balancing, will require numerous changes for the TSOs and participants. In order to facilitate the implementation of the European aFRR platform at the latest 48 months following the entry into force of the European guideline on electricity balancing, CRE is in favour of the examination by RTE of the possibility of participating in a regional initiative for merit order activation of aFRR by the end of 2017. The launch of a regional initiative before the go-live of the European platform will enable a reduction in aFRR activation costs (selection based on the merit order list and competition between the bids of participating countries). It will serve to anticipate the binding provisions of the European guideline on electricity balancing and should fuel the development of market design, but this regional initiative could also become the target European platform in the long term.

However, if this regional initiative cannot be launched by the end of 2017, merit order activation of aFRR could be envisaged for France only, so as to obtain the benefits associated with this method.

The report published by ENTSO-E in 2016⁷³ shows that bid selection based "purely" on the merit order list⁷⁴, can however not be optimal. The methodology of merit order activation in France could therefore be adapted with the inclusion of a pro rata portion in merit order activation for example. CRE requests RTE to consult, as the case may be, with French market participants. It also requests RTE to submit to it, as at the first half of 2018, modalities for merit order activation and pricing conditions, for implementation as from the first quarter of 2020.

Guidance

CRE is in favour of RTE's proposal to examine the impact on system frequency of the switch to a 450-second activation time.

CRE requests RTE to examine the treatment of emergency ramping, within the framework of aFRR developments to be made at European level.

⁷⁰ Article 14 of the Order of 23 April 2008 concerning the technical design and operating recommendations for connection of a production facility to the public transmission network

⁷¹ When the adjustment imbalance is higher than 1,800 MW, see Article 4.1 of the reference technical document published by RTE.

⁷² Article 21 of the European guideline on electricity balancing

⁷³ "Impact of Merit order activation of automatic Frequency Restoration Reserves and harmonised Full Activation Times", 29 February 2016, E-BRIDGE and ENTSO-E.

⁷⁴ aFRR bids are activated based on the merit order list.

It requests RTE to examine these matters by the second half of 2018 at the latest.

CRE is in favour of the examination by RTE of the possibility of participating in a regional initiative concerning merit order activation of aFRR by the end of 2017. If such an initiative cannot be launched by that time, CRE is in favour of such a change to merit order activation being envisaged at French level only. CRE requests RTE to examine this development in the first half of 2018 for implementation in the first quarter of 2020.

Specific products

Analysis

Article 26 of the European guideline on electricity balancing specifies that each TSO can use non-standard products (called “specific products”) but shall have to justify their use, by demonstrating in particular, that the standard products are not sufficient to maintain system security.

The balancing bids currently used are not standardised and therefore take into account their technical specificities, in particular for units connected to the public transmission network. The use of standard products shall be implemented progressively over the course of the next few years, after the go-live of the different European platforms. In addition, standard products, a priori, will not be able to meet some of the TSO’s needs initially, in particular those other than balancing (reconstitution of ancillary services and margins, network). Therefore, CRE is in favour at this stage of maintaining specific products alongside standard products. CRE however recalls that for balancing, the use of standard products must be prioritised. Participants must also have an incentive to offer standard products.

Moreover, RTE proposed within the framework of the consultation that participants proposing a standard bid on the TERRE platform could also propose a specific product with at least the same timeframe and for the same balancing entity. Submitting two bids will give the TSO access to all flexibility for all activation purposes (reconstitution of network margins and ancillary services, congestion management, etc.), in order to maintain a high level of security for the electricity system. However, this could be complex for market participants, and can also discourage participants from proposing standard products, which would undermine balancing market integration. CRE therefore requests RTE to make sure that participants are not affected by any complexity related to the functioning of two parallel systems for making bids.

Guidance

CRE is in favour of the introduction of standard products while maintaining specific products, at this stage.

It requests RTE:

- to make sure to use specific products only as a last resort when standard products can satisfy the need identified, and to submit to CRE a report on the use of these products, as specified by the European guideline on electricity balancing⁷⁵, at least every two years;
- to implement all of the provisions necessary to promote the provision of standard products by participants;
- to make sure that participants are not affected by any complexity related to the functioning of two parallel systems for making bids.

2.6 PRICING AND CONTROL OF BALANCING BIDS

2.6.1 Context, RTE’s proposal and CRE’s preliminary analysis

Pay-as-bid pricing is currently applied to balancing bids in France. The pricing modalities are different depending on whether the balancing bid is based on injecting entities⁷⁶ or withdrawing entities⁷⁷. These differences in pricing methods lead to different incentives for balancing entities comprising injection sites and those comprising withdrawal sites.

The European guideline on electricity balancing⁷⁸ states that marginal pricing shall be applied to standard products exchanged in European platforms. However, a different methodology can be used for pricing of specific products. Therefore, RTE proposes to price standard bids at the marginal price per type of reserve, while specific products will continue to be priced at the bid price.

⁷⁵ Article 26.2 of the European guideline on electricity balancing

⁷⁶ Remuneration based on the balancing volume requested by RTE

⁷⁷ Remuneration based on the actual balancing energy provided by the balancing service provider

⁷⁸ Article 30 of the European guideline on electricity balancing

RTE also proposes to harmonise the pricing methods for injection and withdrawal sites, by pricing the bids based on the volume requested by RTE. Imbalances would be valued at a new “imbalance adjustment settlement price” defined so as to progressively encourage participants to deliver the power activated by RTE⁷⁹. The BRPs’ perimeters would be corrected based on the actual balancing energy provided by the balancing service provider (once those volumes are certified).

Currently in France, participants that wish to take part in the balancing mechanism are not required to pass a test to make bids which are not part of a procurement process (“free” bids). The European guideline on electricity balancing specifies that participants shall have to prequalify in order to participate in the balancing mechanism⁸⁰.

In order to guarantee a sufficient level of accuracy of balancing bids, RTE wishes to maintain systematic control of actual balancing energy provided, and bring it to 5-minute intervals (as opposed to 10 minutes currently).

Within the framework of the public consultation, CRE stated that it envisaged:

- to maintain pricing of specific products at the bid price and switch to marginal pricing for standard products, once the associated European platforms go live;
- the pricing of injection and withdrawal bids based on the volume requested, degressively in the event of adjustment imbalances. However, CRE is not in favour of pricing adjustment imbalances at a different price to the imbalance settlement price applied to BRPs;
- the correction of BRPs’ perimeters based on the actual balancing energy provided so that they are not affected by balancing actions;
- to maintain systematic control of actual balancing energy provided, based on system operator data. However, CRE proposed to maintain the current 10-minute control interval.

2.6.2 Summary of responses to the public consultation

One participant was opposed to pricing of balancing bids at the marginal price per type of reserve.

With regard to the pricing of withdrawal and injection bids, most participants are in favour of the incentives proposed to deliver the volume activated by RTE. Half of these participants agree on pricing the adjustment imbalances (compared to the volume requested by RTE) at the imbalance settlement price, for the purposes of consistency with the treatment applied to BRPs and for simplicity.

A large number of participants are opposed to switching to volume control in 5-minute intervals, and wish for that to remain at 10-minute intervals. A shorter interval would mechanically increase in costs for participants and DSOs (meters, data management tools) but could also penalise certain capacity.

Two participants gave their opinion about the prequalification of balancing bids and wish for (i) harmonisation of prequalification criteria in Europe and (ii) remuneration of the energy delivered during the prequalification phase.

2.6.3 CRE's guidance

Control of balancing bids and management of perimeters

Analysis

In a “reactive”⁸¹ model, BRPs have an incentive to deliver a balanced system before gate closure time through financial incentives, which implies that poor execution of a balancing bid results in a discrepancy in the BRP’s perimeter: the energy corresponding to an imbalance adjustment is therefore valued at the imbalance settlement price.

In France, the roles of balancing service provider and BRP are distinct, which enables balancing service providers to take part in the balancing mechanism without necessarily being a BRP or being attached to a BRP⁸². This organisation, in particular, allows independent balancing service providers, such as demand response operators, to propose bids for sites included within the perimeter of a supplier’s BRP, without their agreement. For this category of participant, it is therefore essential to correct the BRPs’ perimeters taking into account the action effectively carried out by the balancing service provider operating for sites within these BRPs’ perimeters.

⁷⁹ Tolerance limit of +/- 20%, beyond which the participant’s expected pay-off diminishes considerably, symmetrically and homogeneously across all capacity.

⁸⁰ Article 16 (1) of the European guideline on electricity balancing

⁸¹ In a “reactive” model, the TSO operates in a short time period close to real time, as opposed to a “proactive” model, where the TSO anticipates imbalances ahead of real time (see part 2.1).

⁸² Otherwise, if the flexibility of a site is offered in the balancing market by its BRP, an independent demand response operator could not take any action for example.

However, currently, the correction of BRPs' perimeters is done differently for injection and withdrawal bids:

- for injecting entities⁸³, the BRPs' perimeter is corrected based on the balancing volume requested by RTE; any difference between the volume requested and the volume delivered is therefore valued at the imbalance settlement price, within the limit of 20% below the volume requested, and without any limit above the volume requested. A decision is theoretically possible based on the marginal cost of the capacity offered: if the imbalance settlement price is greater than the marginal cost, the participant has an incentive to provide a volume of energy higher than the volume requested by the TSO (and *vice versa*);
- for withdrawing entities, there is no possible decision to be made by BRPs because the balancing perimeter is corrected based on the balancing volume actually delivered by the balancing service provider.

In order to avoid any decision being made by BRPs, it is necessary to correct perimeters based on the actual volume provided by the balancing service provider, regardless of the type of balancing entity (injection or withdrawal). CRE is therefore in favour of RTE's proposal which enables BRPs to not be affected by balancing actions, and to not have an incentive to balance their portfolio in real time through balancing market actions. This proposal complies with the separation of BRP and balancing service provider roles specified by the European guideline on electricity balancing.

In a "proactive" model, incentives conveyed to balancing service providers are not related to their balancing perimeter. They are related to the implementation of a penalty regime, which is based on an effective and systematic control of actual balancing energy provided.

For entities not selected during the call for mFRR and RR bids, the interval for control of energy provided for balancing is currently 10 minutes. Shortening this interval would currently generate significant costs for participants, with benefits that are not certain. It is not a priority development. On a provisional basis, an interpolation method could be set up to verify the delivery of standard RR products (TERRE products, of a duration between 15 and 60 minutes), maintaining a 10-minute interval for verification of actual energy volumes.

However, a 10-minute interval for controls would be incompatible in the long term with a 15-minute imbalance settlement period (overlapping of intervals). Therefore, CRE requests RTE to examine by 2020 the development of the control interval, in order to make it compatible with a 15-minute imbalance settlement period (i.e. either a control interval of 5 minutes or 15 minutes), for implementation at the same time as the change in the imbalance settlement period in 2025 (see part 2.4.3).

Guidance

CRE is in favour:

- of the correction of BRPs' perimeters based on the actual balancing volume provided by balancing service providers;
- the control of the actual balancing energy provided by balancing service providers, done systematically and based first and foremost on system operators' data .

CRE requests RTE to maintain a 10-minute interval for verification of actual balancing volumes provided at this stage, and to examine by 2020, the development of this interval to bring it in line with the 15-minute imbalance settlement period, for implementation in 2025 at the latest.

Pricing of bids

Analysis

Bids currently proposed in the balancing market are priced at the bid price: as it stands, they cannot be compared with each other (for implicit bids formulated with the characteristics of power-generating units in particular), and the implementation of marginal pricing appears complex.

In compliance with the European guideline on electricity balancing, marginal pricing shall be applied to standard products. Marginal pricing of standard products should be able to be different for the standard products of each reserve. Products from the different reserves in fact do not have the same properties or constraints: pricing them on the same basis could encourage participants to prioritise products from the reserves with the least technical constraints.

The European guideline on electricity balancing authorises a method different from marginal pricing for pricing specific products. CRE considers that pay-as-bid pricing for specific products should be maintained at this stage.

⁸³ Basic balancing unit, combining production or withdrawal points, serving RTE's request for balancing

First, these products are not strictly comparable against each other. Second, this pricing has less of an incentive than that of marginal pricing for standard products. In order to create liquidity in European platforms, it is important for each TSO to provide incentives to balancing service providers to offer standard products.

In France, the modalities for pricing bids are currently different according to whether the balancing bid is based on injection (pricing based on the volume requested by RTE) or withdrawal (pricing based on the volume effectively provided by the participant), which leads to different incentives for entities comprising injection points and those comprising withdrawal points. In its green paper, RTE proposed to price balancing bids based on the volume activated by RTE regardless of the bid unit. CRE considers that this modality will eliminate any decision-making between marginal costs of balancing bids and the imbalance settlement price. CRE is therefore favourable.

In addition, RTE wishes to incentivise balancing service providers to deliver the balancing volume requested, without over- or under-adjusting. The financial incentives which will be set up should not have greater constraints for standard products than for specific products, so as to not discourage balancing service providers to offer standard products.

In addition, it is essential for the financial incentives that will be applied in France to not create unfair competition among French and European balancing service providers. Therefore, differences between the volumes of energy provided by balancing service providers and the volumes requested by RTE could, to a certain limit⁸⁴, be priced at the imbalance settlement price, in order to (i) define a simple price signal for French participants, and (ii) provide French participants with incentives in line with those implemented in other European countries.

Guidance

CRE is in favour of:

- marginal pricing of standard bids per standard product, once the associated European platforms for energy exchanges go live;
- pay-as-bid pricing for specific products;
- pricing of bids based on the volume activated by RTE, with imbalance settlement price pricing of differences compared to the volume requested by the TSO, within a tolerance limit to be defined.

CRE requests RTE to examine in 2017/2018 (for implementation as at the start of the TERRE project) a bid pricing system responding to the objectives to (i) encourage participants to provide standard products rather than specific products, and (ii) not penalise French participants compared to European participants, in the least complex way possible. In that regard, CRE requests RTE to:

- define a tolerance limit for balancing volumes provided “close” to the volume activated, and an incentive-based penalty regime above that limit. For imbalance volumes “close” to the volume activated, the imbalance settlement price shall apply;
- take into account the bid pricing mechanisms that will be developed by its European counterparts, and harmonise to the extent possible, the associated financial incentives.

2.7 PRINCIPLES OF RESERVE PROCUREMENT AMONG TSOs

2.7.1 Context, RTE's proposal and CRE's preliminary analysis

Procurement is one of the pillars of electricity system balancing. In 2015 in France, procurement costs for all reserves combined represented €250 M. The European guideline on electricity balancing provides for procurement “as close as possible to real time”⁸⁵. In addition, the European Commission's “Clean energy for all Europeans” package specifies mandatory daily procurement in the day-ahead timeframe.

This package also includes provisions aimed at imposing reserve constitution by market mechanisms and separately for upward and downward capacity (“dual constitution”). The obligation of dual constitution is also specified by the European guideline on electricity balancing; there is however the possibility of exemption, subject to the national regulatory authority's approval.

Lastly, in its current proposal of the “Clean energy for all Europeans” package, the European Commission states that common supranational procurement of reserves must be facilitated.

⁸⁴ Tolerance zone to be defined, before applying additional penalties in the event of a significant difference in the volume provided by the balancing service providers and the volume activated by RTE

⁸⁵ Article 32 of the European guideline on electricity balancing

With regard to the participation of assets procured in European energy exchange platforms, RTE stated in its green paper that it wishes to maintain the current procurement modalities (it does not intend to refer to the characteristics of standard products), while sharing contracted bids in European platforms for the participants that so desire. However, RTE shall not share bids whose activation in European platforms would lead to a margin level it deems insufficient (see part 2.2).

RTE proposed to introduce short-term procurement while maintaining a portion of annual procurement, as well as to examine the implementation in 2021 of regional aFRR and mFRR procurement.

In its preliminary analysis, CRE proposed:

- the switch to procurement of standard products (as from the first half of 2019) for the RR;
- the examination, in 2017, of the maintenance of a portion of annual procurement. CRE considers that it is too early to impose day-ahead procurement for all reserves;
- the assessment, in 2018, of the value of implementing regional RR procurement.

2.7.2 Summary of responses to the public consultation

Most participants are in favour of the procurement of standard products. However, some of them mentioned the technical difficulties associated, as well as the need to maintain participation of capacity not eligible for standard products via procurement mechanisms.

Several participants requested switching to the constitution of the aFRR by tendering. In addition, certain participants proposed revision of the remote control mode, merit order activation and the switch to dual constitution as solutions to improve aFRR competition conditions which will enable such a development in the method of constitution.

Most participants are in favour of short-term procurement. Most of them however recognised the value of maintaining a portion of long-term procurement.

Participants had different views on the procurement of the RR at supranational level. In particular, the economic value of this initiative was questioned given the limited perimeter it would concern and the low cost of this reserve.

2.7.3 CRE's guidance

Analysis

Procurement and standard products

The creation of energy exchange platforms for the different balancing reserves must be accompanied by a progressive increase in the liquidity of platforms and an incentive for participants to propose standard products. In order to steer the French electricity system in that direction, CRE considers that reserve procurement must progressively evolve so as to be based on the characteristics of the standard products exchangeable on the European platforms. RTE shall initially maintain a portion of specific product procurement.

However, CRE requests RTE to implement, for mFRR and RR calls for tender, procurement promoting the selection of capacity compatible with the characteristics of standard products and wishing to participate in European platforms. The implementation of a classification bonus will, in particular, incite market participants to develop capacity capable of delivering standard products and will ensure greater liquidity in European platforms in the long term. Generally, the precise procurement modalities shall have to be determined progressively for each reserve, taking into account the progress of European work on standard products and the TSO's constraints.

For the RR, capacity eligible for a classification bonus during a mFRR and RR call for tender would be the capacity capable of supplying the standard TERRE project product, which is the reference project set to become the European platform for RR energy exchanges (see parts 1.2.2.2, 2.1.3 and 2.6.3). In particular, this eligible capacity shall have: an activation time of 30 minutes maximum;

- a minimum activation duration less than or equal to 15 minutes⁸⁶;
 - The system set up by RTE shall incite participants to develop capacity that can participate later on in the European RR energy exchange platform (products of a duration between 15 and 60 minutes). Given that the number of TERRE platform gate closure times is to be increased (see part 2.1.3), capacity with minimum activation durations strictly higher than 30 minutes will no

⁸⁶ Therefore, an bid than can be activated only for a period of time strictly higher than 15 minutes would not be eligible.

longer be able to participate in the medium term. In the long term, if a switch is made to gate closure times every 15 minutes on the TERRE platform, only capacity with an activation time lower than or equal to 15 minutes shall be able to participate.

- little to no stock constraints.

Since the products that can be activated directly are compatible with the schedule-based nature of the TERRE standard product, the classification bonus does not target this characteristic in particular.

Procurement timeframe

Regarding the procurement timeframe, CRE maintains its preliminary analysis. Short-term procurement has numerous benefits and enables in particular:

- participation of assets whose availability depends on external parameters and is known only close to real time;
- maximisation of the use of capacity by the markets, since market participants will be able to choose to propose their capacity, either as energy in the spot market, or as reserves;
- optimised procurement by the TSO which has a better view of its real need⁸⁷.

CRE considers that daily day-ahead procurement best meets these objectives (as compared to weekly or D-2 procurement). In addition, this timeframe could, in the long term, enable the implementation of co-optimisation⁸⁸ in the case of supranational procurement of reserves. CRE therefore considers that this procurement should be RTE's target for short-term procurement.

Although it has the same view about the different advantages of daily procurement, CRE is not in favour of the obligation set out at this stage by the "Clean energy for all Europeans" package, to procure all capacity under such a timeframe, and wishes to see the possibility of long-term procurement maintained. CRE considers that such procurement is favourable to innovation by guaranteeing the participants concerned a stable and predictable income. CRE therefore requests RTE to conduct a study to determine the economic interest of maintaining annual procurement. Lastly, CRE highlights that the current aFRR constitution timeframe will not be called into question as long as this reserve is constituted by prescription.

Constitution of the aFRR

CRE considers that the current competition conditions surrounding the aFRR cannot lead towards constitution of this reserve by market mechanisms. However, CRE shares the view that daily constitution at a regulated price with obligated participants, based on a very illiquid secondary market, does not provide sufficient visibility to promote the entry of new participants in the market. CRE therefore requests RTE to launch a consultation process with market participants in order to propose developments to ease constraints for participating in the aFRR and to promote in particular, access to this reserve for non-obligated capacity.

CRE considers that in the long term, the aFRR shall have to be constituted by calls for tender whose modalities should favour the participation of unidirectional capacity (upwards or downwards only). Supranational procurement seems to be an interesting opportunity to more rapidly attain competition conditions that can lead to this development. CRE therefore invites RTE to start work, as from the second half of 2017, on the possibility of supranational constitution of the aFRR, to be implemented once the European platform for energy exchanges of this reserve goes live (i.e. 48 months after the entry into force of the European guideline on electricity balancing⁸⁹). In particular, RTE shall have to assess the impact of such constitution on cross-border capacity offered to the markets. While this type of broader constitution can also be considered for the mFRR, in CRE's opinion, RTE shall have to make this a priority especially for the aFRR.

Miscellaneous

Given the limited perimeter it would represent and the low cost of the RR, CRE proposes to not prioritise the matter supranational constitution for this reserve.

⁸⁷ Depending on the type of reserves and the TSO's practices the volume contracted can be defined based on dimensioning incidents (loss of major power-generating units). In this case, a modification of the procurement timeframe would not modify the volume of reserve contracted.

⁸⁸ Methodology aimed at optimising cross-border capacity allocation by simultaneously comparing the value of the capacity for energy exchanges and for balancing reserve exchanges.

⁸⁹ Article 21 of the European guideline on electricity balancing

Guidance

CRE requests RTE to modify the procurement modalities so that the bid selection process promotes, for each reserve, capacity compatible with the European standard product(s) defined for the reserve concerned. These modalities will be progressively defined once the state of progress of European work so allows. For the RR, RTE shall therefore be able to examine these modalities in 2018 for implementation on the occasion of the call for tender for mFRR and RR in 2019.

CRE is in favour of a partial evolution towards daily day-ahead procurement and the maintenance of a portion of annual procurement for replacement reserves. CRE requests RTE to evaluate, as from the second half of 2017, the proportion of capacity to procure annually, and to submit to it the results of this evaluation in the first quarter of 2018. For the mFRR and RR, short-term procurement shall have to be set up on the occasion of the 2019 mFRR-RR call for tender.

CRE considers that the aFRR should, in the long term be constituted through calls for tender based on modalities favouring the participation of unidirectional capacity. To reach this objective, CRE requests RTE to examine, as from the second half of 2017, the appropriateness of using supranational procurement for this reserve. CRE therefore requests RTE to examine this matter alongside the implementation of energy exchange platforms for aFRR imposed by Article 21 of the European guideline on electricity balancing. As the case may be, procurement by calls for tender for the aFRR could therefore be implemented as soon as the European energy exchange platform for this reserve goes live.

2.8 CONSTITUTION OF BIDS AND AGGREGATION

2.8.1 Context, RTE's proposal and CRE's preliminary analysis

The European guideline on electricity balancing⁹⁰ aims to facilitate participation in the balancing markets of demand response, renewable energy and storage, directly or through aggregators.

RTE proposes to maintain the general principles of the model currently implemented in France for the constitution of aggregation perimeters and proposes improvements for:

- increasing the aggregation possibilities offered to market participants;
- simplifying the current system by making it more flexible: creation of a single flexibility perimeter (replacing the three perimeters⁹¹ currently in existence) declared daily with a notification period of ten days and daily notification D-2 for bid units;
- supporting European integration, in particular by giving market participants the means to deliver standard products more easily.

In its preliminary analysis, CRE was in favour of RTE's proposal but noted that its scope depended on parameters not explained in the green paper. CRE however highlighted the following elements:

- the creation of the single flexibility perimeter proposed by RTE does not enable the same flexibility resource to be used by several operators for different processes, even in cases where it is technically possible to dissociate their actions⁹²;
- the possibilities of aggregation between injection points connected to a public distribution network and to the public transmission network⁹³, as well as between withdrawal and injection points, were not addressed in the green paper and should be examined;
- RTE prioritised energy bid units in the green paper. The conditions surrounding constitution of capacity bids were not covered.

⁹⁰ Article 3 of the European guideline on electricity balancing

⁹¹ Operators state to which of the current three types of perimeters their assets belong, depending on the market: reserve perimeter, balancing perimeter and demand response perimeter. Within these perimeters, assets are aggregated by operators to form reserve, balancing or demand response entities.

⁹² Currently, sites can be operated by different operators for frequency ancillary services, mFRR and RR and demand response in the energy markets, since the perimeters are managed separately for these three mechanisms.

⁹³ These possibilities already exist for withdrawal points and therefore reference is made in this chapter to the extension of this possibility to injection points.

2.8.2 Summary of responses to the public consultation

Only one participant was against the aggregation model proposed by RTE and agreed with a portfolio-based model⁹⁴, so as to, in particular, not have to state in advance the exact assets in a bid unit that will actually participate in the supply of energy activated by RTE.

Most participants wish for several operators to be able to operate the same site for the supply of different balancing services, when satisfactory technical solutions can be used to dissociate the actions taken by each of them. However, no participant proposed concrete methods to verify actual volumes provided in those cases.

Market participants are in favour of the daily constitution of bid units and generally prefer a weekly timeframe for flexibility perimeters. In addition, the DSOs stated that RTE's proposal for daily constitution of the flexibility perimeter with a ten-day notification period would cause major technical complexity related to the simultaneous management of a large number of versions of a participant's flexibility perimeter.

Participants also showed their interest in aggregation between points connected to the public distribution network and to the public transmission network and between withdrawal and injection points.

Lastly, participants are in favour of the alignment of the modalities for constituting energy bid units and the conditions for constituting capacity bids. RTE however specified its preference for prioritising the change in the modalities for constituting energy bid units in order to support the implementation of the European guideline on electricity balancing.

2.8.3 CRE's guidance

Analysis

CRE is in favour of the bid unit constitution model proposed by RTE (known as the "aggregate-based" model)⁹⁵ which is an interesting compromise for all of the following:

- facilitating and broadening participation in the balancing markets;
- enabling balancing service providers to take advantage of the specificities of the different technology at their disposal to propose standard products and formulate bids that are technically and economically optimised;
- giving system operators sufficient visibility into energy flows⁹⁶.

CRE is therefore in favour of RTE's proposal to allow a given bid unit and therefore a given site, to participate in the supply of different balancing products in different platforms, since it enables the broadest possible participation in balancing.

Nevertheless, the scope of RTE's proposal and its impact for market participants depend heavily on the parameters for which a consultation will have to be run:

- the notification period and the frequency of constitution of bid units and flexibility perimeters;
- the creation of a single perimeter and proposal of the different services provided by the same asset and operated by different operators;
- the modalities for constituting a bid unit and those for distributing an activation order by RTE across the different sites making up an aggregate;
- aggregation between sites connected to a public distribution network and to a public transmission network;
- aggregation between withdrawal and injection points;
- the aggregation modalities for capacity bid units.

Concerning the notification period and the frequency of constitution of bid units, CRE is in favour of the dynamic proposed by RTE since it enables participants to enjoy greater flexibility and greater possibilities to optimise their assets, without undermining the security of the system. Daily D-2 notification therefore seems to be a good compromise. However, RTE's proposal concerning the notification of flexibility perimeters would generate greater complexity for the DSOs, compared to a benefit not yet quantified at this stage. Weekly constitution with a notifica-

⁹⁴ Model where the market participants freely optimise the participation of their portfolios' assets in the supply of different services without any geographical constraints (the energy can be delivered anywhere in the network) and without informing the TSO.

⁹⁵ Compared to the "unit-based" model and the "portfolio-based" model

⁹⁶ In a portfolio-based model, sites are not pinpointed geographically when bids are constituted. Therefore, bids are activated without the TSO being able to take into account their impact on a particular point in the network. This approach does not able TSOs to anticipate flows in their network.

tion period of seven days could be an interesting compromise. For CRE, this matter shall have to be addressed in a consultation between RTE, the DSOs and market participants.

Concerning the creation of a single flexibility perimeter, CRE considers that it will be a step towards simplification and harmonisation of this mechanism. However, RTE's proposal in its current state does not allow the same flexibility product to be used by different operators for different types of reserves⁹⁷, even in cases where satisfactory technical solutions exist for them to dissociate their actions. But this possibility of several operators is desirable, since it promotes competition among flexibility operators and ensures the widest possible participation of flexibility in the different balancing services. At this stage, CRE is therefore not in favour of RTE's proposal concerning the creation of a single flexibility perimeter. Therefore, to maintain the current competition conditions, CRE requests RTE to set up a consultation process aimed at:

- identifying the types of services for which satisfactory technical solutions can be used to dissociate the actions taken by the different operators without sub-measures being used;
 - In addition, these solutions should make it possible to objectively establish the responsibility of each operator in the event of a partial failure of the flexibility by determining the energy volume (upward or downward) that each participant effectively delivered to the system for the service requested by RTE.
- defining a clear competition framework, including these technical solutions, enabling the actions of several operators at the same point to be dissociated, and clearly establishing financial responsibility in the event of a failure.

CRE considers that this consultation must be fuelled by market participants. The matter of the creation of a single flexibility perimeter could be re-examined if this consultation does not manage to define a satisfactory framework by June 2019. Lastly, CRE highlights that the simplification and harmonisation of processes for notifying flexibility perimeters does not depend on the creation of a single perimeter and invites RTE to continue its efforts toward that goal during the consultation process.

Moreover, CRE considers that specifications should be given about the degree of flexibility granted to balancing service providers concerning the distribution in real time of an activation order across sites belonging to the same bid unit. It is in fact desirable for balancing service providers to have the possibility of having several sites within their bid unit in order to share the risk of individual failure of each site. RTE proposes that balancing service providers have the possibility of distributing in real time an activation order across the sites making up the bid unit. However, beforehand RTE will carry out a check following which the bids from an aggregate that can generate undesirable flows in the network will be blocked and therefore will not be able to be activated, even if they are in the merit order list (see part 2.3). In such a case, CRE considers that, when it is possible, RTE must inform the balancing service provider of the risk of being blocked sufficiently in advance, so that it may have the time to notify a new bid unit if it so desires. Lastly, RTE mentioned in its green paper that a consultation would be conducted on the limits with which a bid unit shall have to comply, concerning in particular, the location of assets, their unit power and the total power of the aggregate. CRE shall be vigilant to ensure that these are the least restrictive limits possible, to facilitate the constitution of standard product bid units.

The possibilities of aggregation between sites connected to the public distribution network and to the public transmission network and between injection and withdrawal points offer interesting prospects, in particular for the supply of standard products and for the participation of intermittent energy. These possibilities shall have to be examined conjointly among RTE, DSOs and market participants. With regards to aggregation between injection and withdrawal points, it appears necessary to distinguish between the constitution of capacity bids and the constitution of energy bids. As specified previously, this type of aggregation presents an interest for the constitution of energy bid units. However, the question should be raised about the feasibility and the accuracy of the control of actual volumes in cases of demand response participation in a downward bid unit and the participation of intermittent power-generating sites in an upward bid unit. In the case of capacity bids, the matter shall have to be studied with regard to the symmetrical nature of the reserve constitution mode.

The aggregation modalities for capacity bid units are not addressed in the green paper which focuses on the constitution of balancing energy bids. Although it is not a priority objective, CRE considers that the constraints on the constitution of energy and capacity bids should be consistent and similar to a large extent.

Lastly, CRE is in favour of the absence of time-based pricing for standard products: this is no longer justified in a context of European exchanges.

Guidance

⁹⁷ Outside the implementation of the principle of sub-measures which consists in measuring independently of each other different apparatuses of a same site participating in the supply of different services.

CRE agrees that a given bid unit, and therefore a given site, should be able to participate in the supply of different balancing products in different platforms, and supports the examination of this proposal in 2017/2018 (MA-RE v9 rules) for implementation once the TERRE platform goes live.

CRE is in favour of a daily D-2 notification of bid units. As regards flexibility perimeters, the notification frequency and the notification period should be defined conjointly between the DSOs and RTE. Weekly notification with a notification period of a maximum of seven days seems to be a desirable compromise. These modalities shall have to be examined in 2018 for implementation in the first quarter of 2020.

CRE requests RTE to run a consultation as of 2018 to define a model for constituting flexibility perimeters which ensures the best competition conditions possible given the technical constraints and the complexity associated with the presence of several operators per site. CRE requests participants to participate actively in this consultation. This consultation should, in particular, identify the technical means to clearly dissociate the actions taken by different operators for the supply of different services using the same asset. As the case may be, the implementation of this constitution model could take place in 2020. If it is impossible to define such a framework by June 2019, CRE will re-examine the creation of a single perimeter.

CRE requests RTE to run a consultation on the precise breakdown of its proposal concerning the aggregation model as of 2018, for implementation in the first quarter of 2020. This consultation should make it possible to define the different parameters of this model (limits concerning the location of assets, their unit power, total power of the aggregate, etc.), thus setting the modalities for the participation of stakeholders in the different reserves. In addition, RTE shall have to set up a transparent system enabling participants to avoid constituting aggregates whose bids will be regularly blocked (see part 2.3.3).

CRE requests RTE to examine in 2018, for implementation in 2020, and in coordination with the DSOs, the matter of aggregation between sites connected to the public distribution networks and those connected to the public transmission network for injection. At the same time, a study may be conducted concerning aggregation of withdrawal and injection points.

Lastly, CRE requests RTE to examine the alignment of modalities for constituting energy bids with those for constituting capacity bids.

CRE is in favour of the absence of time-based pricing for standard products.

2.9 PARTICIPATION OF INTERMITTENT RENEWABLE ENERGY

2.9.1 Context, RTE's proposal and CRE's preliminary analysis

The participation of renewable energy in balancing is theoretically possible in France, but in reality does not take place, in particular due to distortion or absence of incentives caused by the support mechanisms for the development of this energy. Moreover, in the current balancing rules, there are no specific provisions “favourable” to renewable energy (as is the case for example with the aggregation modalities implemented for the participation of demand response).

Participation of renewable energy in balancing is however valuable: upward reserve for renewable thermal energy, downward regulation for intermittent energy, participation in congestion management, etc. In its green paper, RTE stated that it wished to conduct additional economic assessments to provide quantitative elements about the promotion of renewable energy participation in short-term mechanisms. In this document, RTE had already estimated the participation of wind facilities in balancing and in reserves. Moreover, the increasing importance of renewable energy in the energy mix requires better accommodation of this energy in the markets, not only in the intraday market, but also direct participation in balancing markets.

The European guideline on electricity balancing aims to facilitate the participation renewable energy but makes no recommendations about the resources to be used. The energy transition act has no specific provisions concerning the participation of renewable energy in balancing (except for the scheduling obligation, covered in part 2.2).

RTE proposes to examine progressively during the next three rule updates, the modalities for switching from an “open” system to a system “favourable” to renewable energy participation: use of flexibility independently of the characteristics of injection points in the balancing market and development of unidirectional participation for frequency ancillary services.

In its public consultation, CRE was favourable to promoting participation of renewable energy in balancing, if it enables a drop in the overall cost for the electricity system (by taking into account the impact, on the one hand, on the balancing cost, and on the other hand, on energy public service expenses⁹⁸).

CRE also considered that there could be a pool of intermittent capacity that could be used for downward balancing, in particular for new capacity that will be connected in the upcoming years and which will receive the additional income. This capacity could offer downward flexibility, and therefore be remunerated by the TSO. CRE questioned participants about the consideration of this remuneration in the additional income formula with the following two objectives: on the one hand, comply with the reasonable nature of the level of remuneration conveyed by the support mechanism⁹⁹, and on the other hand, provide incentive to producers, for whom it is technically feasible, to participate actively in balancing.

2.9.2 Summary of responses to the public consultation

As regards downward balancing, participants confirmed to a large extent the technical feasibility and the necessity in the long term, for renewable energy to participate. This participation could be more relevant for facilities exiting the support mechanism or receiving the additional income. However, opinions were divided concerning effective short-term participation but also concerning its mandatory nature, regardless of the type of facility (receiving additional income, under a purchase obligation or exiting the support mechanism).

Most participants highlight the need to submit renewable energy to the rules of accountability for imbalances like all other participants.

The incorporation of balancing income on a flat-rate basis in the additional income formula does not have the support of all participants: some are in favour, with reservations in some cases, in order to encourage participation and reduce energy public service costs; others deem the approach premature since renewable energy already has to adapt to the new support mechanisms. The latter consider that balancing gains must be an addition to and not a substitute for these mechanisms, since participation should take place on a voluntary basis. Moreover, the practical difficulties to implement such a mechanism (estimate of the reference income) are highlighted.

In addition to RTE's proposals, additional modalities are suggested to promote the participation of renewable energy:

- markets closer to real time, with a shorter lead time and an imbalance settlement period of 15 minutes (see parts 2.1 and 2.4);

⁹⁸ Participation in balancing could, in particular, generate additional costs for investment in facilities.

⁹⁹ Article L. 314-20 of the energy code states that the conditions of an additional income contract held by a facility cannot result in “the total remuneration of fixed capital [...] exceeding a reasonable remuneration of capital” and that the level of this additional income takes into account “the accumulation of all the facilities’ income”.

- short-term procurement of reserves (see part 2.7), or the implementation of calls for tender for reserves devoted to renewable energy so as to enable the sector to make profitable investments;
- specific methods for control of actual volumes.

2.9.3 CRE's guidance

Analysis

CRE considers that participation of renewables is beneficial to the electricity system, in particular through the use of their downward flexibility for balancing and for congestions management. It is therefore necessary to pave the way for this participation.

On the one hand, care should be taken to ensure that the developments that will be examined during the implementation of the entire roadmap is favourable to the participation of renewable energy. They concern in particular:

- the implementation of an imbalance settlement period of 15 minutes, and energy products of the same duration in the intraday markets: see guidelines and schedule in part 2.4.3;
- the modalities for constitution of bids, and the possibility of aggregating injection points that have different characteristics (DSOs, BRPs): see guidelines and schedule of part 2.8.3;
- the modalities of capacity constitution: separate procurement for upward and balancing capacity and partial short-term procurement: see guidelines and schedule of part 2.7.3;
- the changes in the pre-qualification methods and in verification of actual volumes: see guidelines and schedule in part 2.6.3.

A significant reduction in exclusive TSO window and in particular in the lead time, which would contribute to facilitating participation of renewable energy in the markets and in balancing, would bring major changes to the French balancing model whose costs appear greater than the benefits (see part 2.1.3): it is therefore not envisaged at this stage.

In addition, CRE is not in favour of the implementation of any balancing capacity procurement devoted to renewable energy, as for example a call for tender for downward mFRR. CRE considers that renewables should take part actively in balancing since bids characterising their flexibility will be more efficient than those of other resources. Moreover, the development of the renewable sector is already ensured by different support mechanisms (feed-in tariff policy, calls for tenders), and such a system might interfere with the levels of these mechanisms without opening up any more development prospects.

On the other hand, the treatment of additional income received by a renewables producer participating in the balancing mechanism should be given specific attention, and as the case may be, shall require a change in the legislative and regulatory framework. Producers have access to support mechanisms which enable them somewhat to make their investments profitable, but the levels of these mechanisms were established without taking into account any potential income related to participation in balancing¹⁰⁰. This income must therefore be deducted from public energy service costs which enable these facilities to be financed.

CRE however considers that systematically taking into account a flat rate for balancing income is not necessarily the most appropriate solution. Balancing income depends on activations and therefore the position of facilities in the merit order list. Feedback from the different sectors will be necessary to make progress in this area; at this stage, there are no plans to define an ex ante level for each sector.

CRE therefore proposes an alternative mechanism: producers would have the obligation to state the income derived from participation in balancing and this would be deducted from the support granted. The implementation of an incentive-based system leaving a portion of the income to producers could be envisaged. The implementation of such a system could however require a legislative development.

This system should concern first and foremost new facilities receiving additional remuneration, and possibly new facilities with a purchase obligation. It could also concern, on a voluntary basis, existing installations for which an amendment to the purchase contract could be proposed.

Lastly, when a facility takes part in system balancing, it uses its technical flexibility to modulate its production level based on the needs of the electricity system. This raises several questions – especially if the facility is remunerated within the framework of public service costs of energy which it does not inject (which further promotes its activation) – in terms of:

¹⁰⁰ Within the framework of a competitive tendering procedure, since the estimate of any income related to the participation in balancing over the support period is very delicate, this income cannot be internalised by the applicant.

- clarity of funding, since public energy costs of energy indirectly takes part in the funding of balancing;
- achievement of energy policy objectives, if the expectation of upward and downward activation is very asymmetrical and leads to a drop in renewables production.

Specific provisions should be examined carefully to address these matters.

Guidance

With regard to the technical modalities related to the participation of renewables in balancing, CRE is in favour of the examination of RTE's proposals to promote this participation ("multi BRP, TSO, supplier" aggregation for injection, constitution of capacity separately for upward and downward balancing for the aFRR. In addition, CRE requests RTE to take into account the participation of renewables in the examination of all of the developments planned by this roadmap.

Participation of renewables in balancing targets mainly facilities receiving additional income and more widely producers whose income is based on participation in the wholesale markets (energy and capacity). It could also concern certain new facilities under purchase obligations or existing installations under purchase obligations on a voluntary basis. In any case, the implementation of renewables participation in balancing must be systematically informed by figures, enabling comparison of the costs and the savings expected for the electricity system according to the type of participation: automatic and manual reserves, supply/demand balancing, congestion, etc. The quantitative studies announced by RTE on this matter in the green paper may be used to that end.

Moreover, CRE recommends that the interaction with support mechanisms be explicitly taken into account, and as the case may be, that there be a development in the legislative and regulatory framework. CRE proposes that producers receiving additional income for balancing should be obliged to declare it, and that a portion of this income should be deducted from energy public service costs.

Lastly, CRE considers that it is necessary to explicitly address the two issues raised by the modulation of production of facilities with access to support mechanisms: clarity of the financial balance of balancing and achievement of energy policy objectives.

2.10 CONSULTATION METHODS AND PROMOTION OF INNOVATIVE MODELS IN THE RULES

2.10.1 Context, RTE's proposal and CRE's preliminary analysis

The Energy code¹⁰¹ specifies that the rules related to scheduling, ancillary services and the balancing market must be submitted by RTE and approved by CRE, prior to their implementation. The processes of elaboration, consultation and then approval by CRE of changes in the rules are contained in the text of the rules and require about one year's work.

RTE considers that the roadmap work schedule leaves no occasion for addressing unplanned rule changes, which could however be interesting, in particular to promote experimenting innovative solutions.

RTE therefore proposes to introduce a "fast-track" rule development procedure aimed at promoting innovation, applied to a limited number of subjects, on an experimental basis, while defining safeguards.

CRE, in order to enable faster rule changes on subjects that would not have been covered within the framework of the balancing roadmap, in the public consultation, stated that it was in favour of this proposal by RTE.

2.10.2 Summary of responses to the public consultation

Without being fundamentally opposed to the approach proposed, three participants expressed their concerns and stressed the need to implement the normal consultation process before any generalisation of experimenting with the rules.

Two participants were, on the contrary, in favour of the possibility of being able to change the rules rapidly, in order to lift any barriers to entry and to promote the development of new technology.

2.10.3 CRE's guidance

Analysis

CRE considers that it is essential for the rule change procedures to facilitate the participation of new capacity in electricity system balancing, and for them to promote innovation. Its preliminary analysis was questioned by the public consultation.

Guidance

CRE is in favour of the use of a "fast-track" procedure for changing the rules enabling changes to be implemented on an experimental basis. The following conditions shall have to be met:

- maintenance of consultation by RTE lasting at least ten working days open to all participants, as well as prior referral to CRE for approval;
- definition of access modalities setting a level playing field for all participants, especially since experiments concern limited volumes;
- definition of modalities for terminating experiments: after a period to be defined, RTE shall have to propose to CRE a version of the rules which either incorporates these provisions in the long term or discards them.

¹⁰¹ Articles L. 131-10, L. 321-11 and L.321-14 of the energy code

2.11 TRANSPARENCY IN BALANCING MECHANISMS

The MA-RE rules currently provide for the publication by RTE of aggregated indicators on a half-hourly basis concerning balancing bids activated in its network.

CRE considers that increased transparency of the balancing mechanism can convey economic signals aimed at encouraging the development of flexibility where necessary, and at promoting its availability and activation when it is most useful for the electricity system. In addition, participants, within the framework of the public consultation, stressed the need to improve transparency of the actions undertaken by RTE to balance the system.

CRE therefore requests RTE to improve the transparency of the functioning of balancing mechanisms, particularly by publishing detailed information on the bids made, concerning both standard and specific products, as recommended by the European guideline on electricity balancing, but also by publishing information specific to the French balancing mode, based on proactive management of the margins needed and integrated management of balancing and congestion. In its green paper, RTE in particular, proposed to inform about the recurrent and/or structural constraints in its network. The information requested by CRE is outlined hereafter.

In addition, CRE requests system operators to improve the BRPs' information concerning the balancing of their perimeter, as close as possible to real time, in order to enable them to better anticipate their imbalances and thus reduce the balancing costs borne by customers, as described in part 2.4.3.

2.11.1 Transparency in balancing information

Publication of data specified by the European guideline on electricity balancing

CRE requests RTE to implement as soon as possible the publication of data specified by the European guideline on electricity balancing. Moreover, RTE shall have to carry out this publication in a harmonised format for European TSOs at the latest two years after the entry into force of the European guideline on electricity balancing¹⁰². The data concerns, in particular:

- information on all the balancing bids made (standard products and specific products), anonymised if necessary, at least 30 minutes after the end of the imbalance settlement period concerned. This information includes:
 - the type of reserve (aFRR, mFRR and RR) and the lead time of the bid;
 - the validity period of the bid;
 - the volumes and prices offered;
 - the volumes activated and the prices paid, as the case may be;
 - information stating if a bid has been declared unavailable by the participant;
 - information stating if the bid has been converted from a specific product.
- as the case may be, information concerning the modalities for converting balancing energy bids using specific products, at the latest 30 minutes after the end of the imbalance settlement period concerned;
- aggregated information on the balancing energy bids at the latest 30 minutes after the end of the imbalance settlement period concerned, which includes:
 - the total volume of balancing energy bids made and activated, broken down by type of reserve and by standard and specific product;
 - the total volume of unavailable bids broken down by type of reserve.
- information on the balancing capacity offered and accepted by RTE, as the case may be (frequency containment, automatic frequency restoration, manual frequency restoration, replacement,), as well as the prices offered and paid for the balancing capacity acquired, anonymised if necessary, at the latest one hour after the results of the acquisition procedure have been notified to bidders.

The deadline for implementing these publications shall be proposed by RTE to CRE, after consultation of market participants by 1 January 2018.

The implementation of the publication of this information, in a harmonised format for European TSOs, shall in any case take place at the latest two years after the entry into force of the European guideline on electricity balancing¹⁰³.

¹⁰² Article 12 of the European guideline on electricity balancing

¹⁰³ Article 12 (5) of the European guideline on electricity balancing

Publication of additional information related to the specificities of the French system

In addition to the elements specified by the European guideline on electricity balancing, CRE requests RTE to publish the following additional information specific to the French proactive balancing management model:

- within the framework of the detailed publication of bids specified by the European guideline on electricity balancing, the identification of bids not transmitted to the European platform or not activated in the merit order list in the French system and the associated purpose (reconstitution of margins, congestion, etc.).
- the volume requested by RTE (and as the case may be the associated price) in European platforms;
- update of the margins required and forecast margins for peak times, or if relevant, for each hour of the day.

Lastly, CRE requests RTE to inform about recurrent and/or structural constraints identified in the transmission network, presented in the form of a map identifying in particular the most relevant geographical zones for aggregation of flexibility bids.

The frequency and deadline for implementing these publications shall be proposed by RTE to CRE, after consultation of market participants by 1 January 2018.

2.11.2 Visibility given to balancing responsible parties

CRE requests system operators to publish data close to real time for BRPs, to enable them to better anticipate their imbalances for profile-based consumption. It also requests RTE and all DSOs to work on publishing the national profiling imbalance and the national calibration coefficient for a given week W as from W+1, in 2019 at the latest.

In addition, CRE requests Enedis and RTE to define the modalities for the publication of dynamic profiles when they are implemented, in consultation with participants, within a timeframe compatible with the implementation of these profiles. CRE also requests RTE and the DSOs to define, in consultation with participants, the modalities for publishing data enabling them to anticipate the calculation of imbalance settlement before financial settlement, in order to support the implementation of the settlement of all imbalances at the imbalance settlement price and not at the spot price.

Paris, 22 June 2017

For the Energy Regulatory Commission,
A commissioner,

Christine CHAUVET

ANNEX 1: SCHEDULE OF THE ELECTRICITY SYSTEM BALANCING ROADMAP PROPOSED BY CRE EXAMINATION IN 2017/2018

Start of examination by CRE	CRE's proposal	Paragraph	Chapter of the roadmap	2017				2018				2019				2020				2021				2022							
				Q1	Q2	Q3	Q4																								
Examination within the framework of the MA-RE v8.3 rules																															
2017	Comparative cost/benefit analysis of the TERRE project and the switch to intraday cross-border gate closing times and scheduling process gate closing times every 30 minutes	2.1	6																												
2017	Assessment impact of the "margin model"	2.2	7																												
2017	Impact assessment of integrated management of balancing and congestion	2.3	8																												
2017	Participation in a regional energy exchange initiative for merit order activation of aFRR	2.5	10																												
2017	Extension of the scheduling process mechanism to generating facilities connected to a public distribution network (Order of 3 August 2016)	2.2	7																												
2017	Proposal of a schedule for the publication of data specified by the European guideline on electricity balancing	2.11	-																												
2017	Proposal of a schedule for the publication of additional information requested by CRE	2.11	-																												
2017	Insertion of a portion of daily reserve procurement	2.7	12																												
2017	Consideration of the activation of exceptional measures by RTE for imbalance settlement	2.4	9																												
2017	Switch to a 15-minute imbalance settlement period	2.4	9																												
Examination within the framework of the MA-RE v9 rules																															
2017/2018	Proposal of a schedule for implementing dynamic profiling and flow reconstitution by load curves for the low-voltage >36 kVA domain	2.4	9																												
2017/2018	Cost/benefit analysis of the switch to a reactive model with a shorter exclusive TSO window	2.1	6																												
2017/2018	All imbalances settled at the imbalance settlement price	2.4	9																												
2017/2018	Impact assessment for frequency of a switch to an activation time of 450 seconds for the aFRR	2.5	10																												

The "definitive" implementation date shall be determined during the study conducted by CRE concerning the switch to a 15-minute imbalance settlement period.

DELIBERATION NO 2017-155

22 June 2017

2017/2018	Examination of the elimination of emergency ramping for the aFRR	2.5	10					
2017/2018	Go live of the TERRE platform	2.1 & 2.5	6 & 10					
2017/2018	Improvement of the scheduling process mechanism	2.2	7					
2017/2018	Transmission of operating schedules	2.2	7					
2017/2018	Implementation of processes for articulation between congestion management and balancing	2.3	8					
2017/2018	Study of the appropriateness of switching to dynamic profiling per tariff offer	2.4	9					
2017/2018	Definition of a pricing and control mechanism for standard bids	2.6	11					
2017/2018	Technical pre-qualification of balancing service providers	2.6	11					
2017/2018	Harmonisation of bid pricing modalities for injection and withdrawal	2.6	11					
2017/2018	Marginal pricing of standard bids (without time-based pricing)	2.6	11					
2017/2018	Integration of the possibility for a bid unit (and therefore a site) to formulate bids for different products	2.8	13					
2017/2018	Publication of the results of the "imbalances" process W+1	2.4	9					
2017/2018	Study of the economic value and the feasibility of supranational procurement for the aFRR	2.7	12					
2017/2018	Integration of renewables in market mechanisms	2.9	14					

EXAMINATION IN 2018/2019

Start of examination by CRE	CRE's proposal	Paragraph	Chapter of the roadmap	2018				2019				2020				2021				2022				2023			
				Q1	Q2	Q3	Q4																				
2018/2019	[With reservation] Improvement of the margin model and implementation of a regime for compensating blocked bids	2.2	7																								
2018/2019	[With reservation] Implementation of a regime for compensation of blocked bids for congestion	2.3	8																								
2018/2019	Insertion of standard products in reserve procurement	2.7	12																								
2018/2019	[With reservation] Definition of a competition framework enabling operation of a site by several operators	2.8	13																								
2018/2019	Coordinated TSO/DSO management of flexibility connected to the public distribution network	2.3	8																								
2018/2019	[With reservation] Switch to merit order activation for the aFRR at French level (if there is no participation in a regional initiative for this reserve)	2.5	10																								
2018/2019	Evolution of the dynamics for constituting perimeters and bid units	2.8	13																								
2018/2019	Precise breakdown of the aggregation model	2.8	13																								
2018/2019	[With reservation] Integration of aggregation possibilities between 1/ injection and withdrawal capacity and 2/ capacity connected to the public distribution network and the public transmission network	2.8	13																								
2018/2019	Alignment of the modalities for constituting energy and capacity bids	2.8	13																								
2018/2019	Go-live of the European mFRR energy exchange platform	2.5	10																								
2018/2019	Go-live of the European mFRR energy exchange platform	2.5	10																								
2018/2019	Integration of renewables in market mechanisms	2.9	14																								



EXAMINATION IN 2019/2020

Start of examination by CRE	CRE's proposal	Paragraph	Chapter of the roadmap	2018				2019				2020				2021				2022				2023			
				Q1	Q2	Q3	Q4																				
2019/2020	[With reservation] Elimination of the k factor and implementation of an imbalance settlement price with greater incentive	2.4	9																								
2019/2020	Implementation of intraday cross-border gate closure times and scheduling process gate closure times every 30 minutes	2.1	6																								
2019/2020	[With reservation] Implementation of regional procurement of aFRR	2.7	12																								
2019/2020	Report on the use of specific products	2.6	11																								
2019/2020	Examination of the switch to intraday cross-border gate closure times and scheduling process gate closure times, every 15 minutes.	2.1	6																								
2020/2021	Alignment of scheduling steps with the imbalance settlement period	2.2	7																								
2020/2021	Alignment of volume control intervals with the imbalance settlement period	2.6	11																								
2019/2021	Integration of renewables in market mechanisms	2.9	14																								

The "definitive" implementation date shall be determined during the study conducted by CRE concerning the switch to a 15-minute imbalance settlement period.

ANNEX 2: REFERENCE DOCUMENTS

Roadmap of French electricity system balancing – RTE’s green paper

The consolidated and full versions of RTE’s green paper are available at the following links:

- consolidated version:
 - http://www.rte-france.com/sites/default/files/livre_vert_equilibre_od_version_abregee.pdf
- full version:
 - http://www.rte-france.com/sites/default/files/livre_vert_equilibre_od_version_detaillee.pdf

The qualitative assessment of the impact of the different safety models on the French electricity system conducted by the Microeconomix firm is available at the following links:

[http://www.microeconomix.fr/sites/default/files/microeconomix -
_etude_economique_qualitative_des_modeles_de_surete_-_rapport_complet_-_vf.pdf](http://www.microeconomix.fr/sites/default/files/microeconomix_-_etude_economique_qualitative_des_modeles_de_surete_-_rapport_complet_-_vf.pdf)

Study by ENTSO-E on the evolution of the imbalance settlement period

The study by ENTSO-E on the evolution of the imbalance settlement period is available at the following link:

- <https://www.entsoe.eu/major-projects/network-code-implementation/cba-imbalance-settlement-period/Pages/default.aspx>

European regulation establishing a guideline on electricity balancing - version of 16 March 2017

The version of the European regulation establishing a guideline on electricity balancing voted by Member States on 16 March 2017 is available at the following link:

- <http://ec.europa.eu/energy/en/topics/wholesale-market/electricity-network-codes>

European Commission’s “Clean energy for all Europeans” package

All of the documents making up the European Commission’s “Clean energy for all Europeans” proposal of 30 November 2016 are available at the following link:

- <https://ec.europa.eu/energy/en/news/commission-proposes-new-rules-consumer-centred-clean-energy-transition>