RTE Load-frequency control block operational agreement

Version in force on 01/04/2026

The following translation is not binding

The authentic language for interpretation or execution of the Manual frequency restoration and Complementary reserve terms and conditions is French

SUMMARY

INTRODUCTION

This document constitutes the Load-Frequency Control (LFC) Block operational agreement for France (hereinafter referred to as the "LFC Block Agreement") and includes the conditions and methodologies listed in paragraph 1 of Article 119 of Commission Regulation (EU) 2017/1485 establishing a guideline on the management of electricity transmission (hereinafter referred to as the "SOGL Regulation or SOGL").

FOREWORD

1. This document defines the draft conditions and methodologies of the LFC Block Agreement drawn up by Transmission System Operator RTE for the French LFC Block, in accordance with Article 119 of the SOGL Regulation.
2. This document includes in particular the proposal drawn up by Transmission System Operator RTE of the Continental Europe synchronous area concerning the development of the methodologies and conditions of the French LFC Block agreement to be submitted to the competent regulatory authority for approval in accordance with Article 119 and paragraph 3, point e) of Article 6 of the SOGL Regulation.
3. France's LFC block structure, for which RTE is the Block Monitor Transmission System Operator (hereinafter referred to as "RTE LFC Block"), within the Continental Europe synchronous area is identified and described in the joint proposal for determining the LFC blocks of the Continental Europe synchronous area under the terms of paragraph 2 of Article 141 of the SOGL Regulation. This structure is presented below:
    a) The France LFC block consists of the single RTE LFC block, with RTE being the LFC block monitor and responsible for reserve dimensioning obligations;
    b) The RTE LFC block is made up of a single LFC area of the same size as the RTE LFC block, with RTE assuming the Load-frequency control obligations within the interconnected LFC area with neighbouring LFC areas in other countries;
    c) The RTE LFC area consists of a single monitoring area of the same size as the RTE LFC area, with RTE responsible for all monitoring activities.
4. This proposal takes into account the general principles and objectives set out in the SOGL Regulation, Commission Regulation (EU) 2017/2196 of 24 November 2017 establishing a network code on emergency and restoration of the electricity system (hereinafter referred to as "NCER"), and Regulation (EC) 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity (hereinafter referred to as "Regulation (EC) 714/2009"). The objective of the SOGL Regulation is to maintain operational safety, the quality of the frequency and to contribute to the efficient management and development of the interconnected electricity transmission system and the electricity sector. The France LFC block operating agreement sets out the general conditions for operating the France LFC block within the Continental Europe synchronous area and with LFC blocks in other synchronous areas.
5. This proposal takes into account the Load-frequency control structure of each synchronous area in accordance with Article 139 of SOGL. The Load-frequency control structure defines the responsibilities specific to each of its constituent operating areas. The synchronous area is defined as the upper level of this LFC structure; a zone within which the frequency is the same everywhere.

The Continental Europe synchronous area comprises several LFC blocks, each LFC block comprising one or more LFC areas. An LFC area itself comprises one or more monitoring areas.

6. The scope of this proposal is to establish the methodologies and conditions of the France LFC block operational agreement, for which RTE is the LFC block monitor, part of which is subject to approval by the competent regulatory authority, in compliance with the requirements defined in Article 119 and paragraph 3, point e) of Article 6 of the SOGL Regulation.

7. In accordance with the requirements of paragraph 1 of Article 4 of the SOGL Regulation, this proposed LFC block agreement contributes to meeting the objectives of determining the process and the common structure of Load-frequency control, ensuring the conditions for maintaining operational safety throughout the Union and ensuring the conditions for maintaining the level of frequency quality in all the synchronous areas of the Union.

8. In conclusion, this proposal contributes to the general objectives of the SOGL Regulation of enabling more efficient use of the network and increasing competition, to the benefit of consumers.

SECTION 1: GENERAL PROVISIONS

ARTICLE 1: PURPOSE AND SCOPE

1. The RTE LFC block operating agreement is a document containing:
   a) The methodologies and conditions of the LFC block agreement subject to approval by the regulatory authority in accordance with Article 119 and paragraph 3, point e) of Article 6 of the SOGL Regulation. These obligations are covered in Section 2 of this agreement.
   b) The methodologies and conditions of the LFC block agreement referred to in Article 119 of the SOGL Regulation which are not subject to approval by the regulatory authority in accordance with Article 6 of the SOGL Regulation, nor to public consultation in accordance with Article 11 of the SOGL Regulation. These methodologies and conditions are covered in Section 3 of this agreement.

2. Section 2 of this operational agreement for the RTE LFC block is based on Articles L.321-10 and L.321-11 of the French Energy Code and is based on the Market Rules applicable to Scheduling, the Balancing Mechanism, Frequency Ancillary Services as well as mFRR and Complementary Reserves.

ARTICLE 2: DEFINITIONS AND INTERPRETATION

1. For the purposes of understanding this proposed LFC block agreement, the terms used in this document have the same meaning as the definitions listed in Article 3 of the SOGL Regulation, Regulation (EC) 2019/943 and Directive (EU) 2019/944.

2. In this proposal, unless the context indicates otherwise:
   a) The singular implies the plural and vice versa;
   b) The table of contents and headings are intended solely to facilitate the interpretation of this proposed LFC Block Agreement; and
   c) Any reference to legislation, regulations, directives, orders, documents, codes or any other provision includes all amendments, extensions and re-adoptions in force.

SECTION 2: METHODOLOGIES AND CONDITIONS OF THE FRANCE LFC BLOCK OPERATING AGREEMENT IN ACCORDANCE WITH ARTICLE 119 AND PARAGRAPH 3, POINT E) OF ARTICLE 6 OF THE SOGL REGULATION

In this section, RTE presents below all the methodologies and conditions of the LFC RTE block agreement submitted for approval by the competent regulatory authority in accordance with Article 119 and paragraph 3, point e) of Article 6 of the SOGL Regulation.

ARTICLE 3: COMMON RAMPING RESTRICTIONS FOR THE ACTIVE POWER OUTPUT OF HVDC INTERCONNECTORS BETWEEN SYNCHRONOUS AREAS IN ACCORDANCE WITH PARAGRAPH 3 OF ARTICLE 137 OF THE SOGL REGULATION

1. In accordance with paragraph 3 of Article 137 of the SOGL Regulation, RTE defines below the rules for ramping restriction periods and/or maximum ramping rates for interconnectors between the RTE LFC block and the LFC blocks of other synchronous areas.
2. RTE and the supervising connecting TSO of the LFC block concerned may define the conditions for common ramping restriction periods and/or maximum ramping rates for HVDC interconnectors between two synchronous areas and shall reach operational agreements with the operator of each HVDC interconnector defining the operational processes and mechanisms that apply these common restrictions for each HVDC interconnection concerned.
3. RTE shall endeavour to ensure that all HVDC interconnectors between the same two synchronous areas are treated equally in terms of restrictions, taking into account the technical capabilities of each HVDC interconnection.
4. The common restriction conditions must take into account exchange conditions applicable within the Continental Europe synchronous area, defined under Article 118 of the SOGL Regulation, to limit its influence on the fulfilment of the FRCE target parameter applicable to the RTE LFC block. As stated in paragraph 3, Article 137 of the SOGL Regulation, these common restrictions do not apply to imbalance netting, frequency coupling and cross-border activation of FRR over HVDC interconnectors.
5. These restriction conditions must also ensure that the RTE LFC block within the Continental European synchronous area is prevented from entering a state of emergency, in coordination with the TSO and HVDC Interconnector operator impacted, under the terms of points (1) and (2).
6. A summary of the common ramping period restrictions and/or maximum ramping rates for each HVDC interconnector must be made public, in accordance with the publication requirements of Article 8 of the SOGL Regulation.

ARTICLE 4: RAMPING RESTRICTIONS FOR ACTIVE POWER OUTPUT IN ACCORDANCE WITH PARAGRAPH 4 OF ARTICLE 137 OF THE SOGL REGULATIONS

The conditions for restricting ramping periods and/or maximum ramping rates for generation and consumption units within the RTE LFC block are defined in the Market Rules relating to Scheduling, the Balancing Mechanism and Frequency Ancillary Services.

ARTICLE 5: FRR DIMENSIONING RULES IN ACCORDANCE WITH PARAGRAPH 1 OF ARTICLE 157 OF THE SOGL REGULATION

1. In accordance with the definitions in Article 3, paragraphs 7 and 13 of the SOGL Regulation, the role of the FRR (Frequency Restoration Reserve) is to restore system frequency to the nominal frequency within 15 minutes. This role is fulfilled by automatic reserves that can be activated in less than 5 minutes, known as aFRR (automatic Frequency Restoration Reserve), and manual reserves that can be activated in less than 13 minutes, known as mFRR (manual Frequency Restoration Reserve).
2. The FRR dimensioning for the RTE LFC block must meet the conditions of paragraph 2 of Article 157 of the SOGL Regulation. In particular, the FRR dimensioning for the LFC block must allow us to:
    a. Continuously respond to positive and negative dimensioning incidents. For the RTE LFC block:
        i. The positive dimensioning incident is the loss of the largest generator coupled to the grid within the LFC block;
        ii. The negative dimensioning incident is the loss of the largest consumption volume within the LFC block.
    b. Ensure that the combination of FRR reserve capacities is sufficient to cover positive or negative imbalances in the LFC block for at least 99% of the time.

    Until RT_{19}, the FRR capacity requirement in the RTE LFC block is set at the positive and negative dimensioning incident.

    After RT_{19}, the FRR capacity requirement in the RTE LFC block is calculated using a statistical method. The dimensioning rules applicable after RT_{19} are described in paragraph 1 of Annex 2 of this agreement.

3. In the event of an imbalance between generation and consumption within the RTE LFC block, the aim of aFRR is to automatically restore balance within the LFC block by restoring the frequency to its nominal value and cancelling out the differences between exchanges metered at borders and their scheduled values. Within the framework determined by article L.321-11 of the French Energy Code and its mission of maintaining the safe operation of the power system, and according to the terms of the Market Rules for Frequency Ancillary Services, RTE contracts with market participants who have generation, load reduction or storage capacities, to make aFRR capacities available.

    The dimensioning rules applied to calculate the aFRR requirement within the RTE LFC block are defined in paragraph 1 of Annex 1 to this Agreement, for the rules in force up to date RT_{19}, and in paragraph 2 of Annex 2 to this Agreement, for the rules in force after date RT_{19}. These rules take into account the aFRR capacity dimensioning recommendations set out in the Continental Europe synchronous area agreement, drawn up in accordance with Article 118 of the SOGL Regulation.

4. The aFRR cannot compensate for all disturbances, including the positive and negative dimensioning incident. In this case, activation of the aFRR does not enable the full replenishment of primary reserve and the aFRR is exhausted. Therefore, within the framework determined by article L.321-11 of the French Energy Code and its mission of maintaining the

safe operation of the power system, and according to the terms of the Market Rules for Manual Frequency Restoration and Complementary Reserves, RTE contracts with market participants who have generation, load reduction or storage capacities, to provide mFFR manual active power reserves.

The dimensioning rules applied to calculate the mFRR requirement within the RTE LFC block are set out in paragraph 2 of Annex 1 to this Agreement, for the rules in force up to RT_{19}, and in paragraph 3 of Annex 2 to this Agreement, for the rules in force after RT_{19}.

5. Throughout the day, RTE's security model is based on a dynamic calculation of the FRR capacities required (also referred to as "required margin" capacity) and not necessarily contracted. This model, which is based on continuous monitoring of available margins in relation to forecast imbalances and risks applicable at different timescales, is known as the "margins" model. If the margins available are lower than those required according to the safety risk criteria and in accordance with paragraph 4 of Article 157 of SOGL, specific actions to reconstitute the margins are undertaken in accordance with the terms of the Market Rules relating to Scheduling and the Balancing Mechanism with the aim of increasing the capacities available to RTE for balancing the power system.
6. The margin level required on the system at different times is monitored by RTE with regard to contracted capacity (according to the rules mentioned in points 3 and 4 of this Article) and by also integrating non-contracted capacity offered on the balancing mechanism and through aFRR.
7. The dynamic calculation of the required margin capacity is achieved using a probabilistic method based on regularly updated statistical observations of imbalances and contingencies in production, consumption and renewable energies. This method evaluates the so-called "1% risk" and the margin level required at the applicable deadlines ranging from 15 minutes to 8 hours before real time, to ensure coverage of all positive or negative imbalances for at least 99% of the time, in accordance with the requirements of paragraph 2, points a), b), h) and i) of article 157 of SOGL. Furthermore, for the 15-minute short-term deadline, RTE determines the margin required to ensure that there is at least enough FRR reserve capacity (aFRR and mFRR) to cover the positive and negative dimensioning incident.

ARTICLE 6: COORDINATED ACTIONS INTENDED TO REDUCE THE FRCE, DEFINED IN ACCORDANCE WITH PARAGRAPH 14 OF ARTICLE 152 OF THE SOGL REGULATION

The obligation relating to paragraph 14 of Article 152 of the SOGL Regulation does not apply to the RTE LFC block since the structure of the France LFC block is made up of a single RTE LFC block, itself made up of a single RTE LFC area.

ARTICLE 7: MEASURES TO REDUCE THE FRCE BY MEANS OF CHANGES IN ACTIVE POWER PRODUCTION OR CONSUMPTION IN ACCORDANCE WITH PARAGRAPH 16 OF ARTICLE 152 OF THE SOGL REGULATION

1. The measures intended to reduce the FRCE within the RTE LFC block in accordance with paragraph 16 of Article 152 of the SOGL Regulation are described in the Market Rules relating to Scheduling and the Balancing Mechanism.
2. Where necessary, RTE may enter into additional agreements with specific participants to implement additional measures. These agreements can take the form of experiments, among other things.

SECTION 3: METHODOLOGIES AND CONDITIONS OF THE LFC BLOCK AGREEMENT REFERRED TO IN ARTICLE 119 OF THE SOGL REGULATION WHICH ARE NOT SUBJECT TO APPROVAL BY THE REGULATORY AUTHORITY IN ACCORDANCE WITH ARTICLE 6 OF THE SOGL REGULATION

In this section, RTE hereby provides information on all the methodologies and conditions of the RTE LFC block agreement that are not subject to approval by the competent regulatory authority.

In accordance with Article 184 of SOGL, the content of the RTE LFC Block Agreement must be Notified to the competent regulatory authority and made public in accordance with Article 8 of SOGL, unless the confidentiality requirement applies under the terms of Article 12 of SOGL.

ARTICLE 8: THE LFC BLOCK MONITOR IN ACCORDANCE WITH PARAGRAPH 1 OF ARTICLE 134 OF SOGL

1. In accordance with paragraph 1 of article 134 of SOGL, RTE is designated as the LFC France Block Monitor, being the sole operator of the public transmission system of the LFC France Block.
2. The RTE LFC block operational agreement defines RTE's responsibilities within the France LFC block, listed in article 134 of SOGL. Among other things, RTE is responsible for collecting frequency quality evaluation data relating to the France LFC block, in accordance with Article 129 of SOGL, and for communicating this data every three months to the synchronous area monitor for publication.

ARTICLE 9: ADDITIONAL REQUIREMENTS CONCERNING THE AVAILABILITY, RELIABILITY AND REDUNDANCY OF TECHNICAL INFRASTRUCTURES, IN ACCORDANCE WITH PARAGRAPH 3 OF ARTICLE 151 OF SOGL

1. In accordance with paragraph 3 of article 151 of SOGL, RTE has the possibility to define additional requirements concerning the availability, reliability and redundancy of the technical infrastructures for the provision of reserves, in addition to the requirements requested by the SOGL Regulation and the Continental Europe Synchronous Area agreement.
2. For aFRR reserve capacity, the technical infrastructure requirements are defined in the Market Rules for Frequency Ancillary Services.
3. For contracted mFRR reserve capacity, the technical infrastructure requirements are defined in the Market Rules for Manual Frequency Restoration and Complementary Reserves and in particular in the associated specifications for implementing observability.
4. For the rest of the mFRR reserve capacity, the technical infrastructure requirements are defined in the Market Rules relating to Scheduling and the Balancing Mechanism, and more specifically in the terms and conditions for access to RTE's Information System and applications specific to the "Scheduling and Balancing Mechanism" system.

ARTICLE 10: OPERATIONAL PROCEDURES APPLICABLE IN THE EVENT OF EXHAUSTED FRR, IN ACCORDANCE WITH PARAGRAPH 8 OF ARTICLE 152 OF SOGL

1. In accordance with paragraph 8 of Article 152 of SOGL, RTE is obliged to specify operational procedures applicable in cases of exhausted FRR. In these procedures, RTE has the right to require changes in the active power production or consumption of power generating modules and demand units.
2. The measures implemented by RTE in cases of exhausted FRR and the conditions for their use are described in Article 7 of this RTE LFC block agreement.
3. RTE classifies these measures into three categories and uses them accordingly to deal with imbalances occurring within the France LFC block. In no particular order, a list of measures available to RTE:
    a. Standard measures: contracted aFRR capacity, bids submitted to the balancing mechanism by market participants (contracted or freely offered), supplementary bids submitted by participants following the activation of a degraded mode on the balancing mechanism, assistance and back-up contracts with neighbouring TSOs.
    b. Exceptional measures: back-up capacity using generation units, the push button[1] on the France-GB link, supplements to assistance and back-up contracts with neighbouring TSOs, the call for the extraordinary procedure in accordance with the Continental Europe synchronous area agreement.
    c. Emergency measures: voluntarily reducing the nominal voltage on the electricity distribution system by 5%, load shedding, islanding a generation unit.
4. In accordance with paragraph 4 of Article 157 of SOGL, RTE ensures that it always has a volume of available FRR reserve capacity at least equal to the volume of the required margin, by issuing a call for margin capacity if necessary. If these measures are exhausted or are in serious danger of being exhausted, i.e. if all the standard measures available are insufficient to restore the required margin, RTE shall implement exceptional measures, then emergency measures if necessary.

ARTICLE 11: ESCALATION PROCEDURES IN ACCORDANCE WITH PARAGRAPH 4 OF ARTICLE 157 OF SOGL

1. In accordance with paragraph 4 of article 157 of SOGL, RTE shall specify the escalation procedure for cases of severe risk of insufficient reserve capacity on FRR in the RTE LFC block. This procedure corresponds to the implementation by RTE of the classified measures referred to in paragraph 3 of Article 10 above.
2. The RTE escalation procedure for successively implementing standard, exceptional and emergency measures is conditioned by criteria assessed in real time and established on the basis of:
    a. The level of margin available compared to the margin required;

[1] The Push Button is used to activate the active power exchange programme on the IFA HVDC link with a ramp rate faster than that tolerated in normal operation.

b. The FRCE control error within the RTE LFC block (in depth and duration) and which takes into account the procedures established in the synchronous area agreement in accordance with paragraph 1, point n) of Article 118 of SOGL;

c. The frequency deviation within the Continental Europe synchronous area (in depth and duration) and which takes into account the procedures established in the synchronous area agreement in accordance with paragraph 1, point n) of Article 118 of SOGL;

ARTICLE 12: FRR AVAILABILITY REQUIREMENTS AND CONTROL QUALITY REQUIREMENTS IN ACCORDANCE WITH PARAGRAPH 2 OF ARTICLE 158 OF SOGL

1. In accordance with paragraph 2 of Article 158 of SOGL, RTE shall specify the availability requirements for aFRR reserve capacity:

    a. The regulations on the technical conditions for connection of generation units must enable RTE to ensure that the capacity within the France LFC block to supply a sufficient volume of aFRR reserve capacity to cover its overall aFRR dimensioning requirement as defined in Article 5.

    b. The aFRR reserve capacity must be permanently available on the scheduled intervals contracted, in accordance with the procedures defined in the Market Rules for Frequency Ancillary Services. RTE operates a Reserve Exchange Notification system for Reserve Providers in accordance with the procedures defined in these same Rules.

    c. RTE continuously monitors the volume of aFRR reserve capacity available on the system, in relation to the minimum requirements defined in accordance with the dimensioning rules specified in Article 5. In particular, RTE may replenish the minimum volume of aFRR capacity required, via the procedures defined in the Market Rules relating to Scheduling and the Balancing Mechanism (e.g. in the event of the failure of a reserve provider, adjustment by RTE impacting the volume of aFRR capacity or modification of the assumptions used to define intraday aFRR requirements).

    d. RTE continuously monitors the performance of aFRR reserve capacities, and may penalise reserve providers as necessary.

2. In accordance with paragraph 2 of Article 158 of SOGL, RTE shall specify the availability requirements for mFRR reserve capacity:

    a. For generation units connected to the public transmission system, availability is based on the legal obligation to offer available upward and downward power capacity on the balancing mechanism above an installed capacity threshold. RTE continuously assesses the volume of mFRR reserve capacity based on the technical constraints declared for these units.

    b. The availability of mFRR capacity contracted upward under the Market Rules for Manual Frequency Restoration and Complementary Reserves must also cover at least four occurrences each day of a contingency equivalent to the positive dimensioning incident. For this capacity, tests or trials may be carried out at RTE's request with any failure observed giving rise to a penalty.

    c. The availability of mFRR capacity contracted downwards as part of RTE's rules on Manual Frequency Restoration and Complementary Reserves must also cover a contingency

equivalent to the negative dimensioning incident every hour. For this capacity, tests or trials may be carried out at RTE's request with any failure observed giving rise to a penalty.

d. RTE ensures that the free bids available on the Balancing Mechanism complement the contracted capacity, so as to cover the required margins at all times, both upward and downward. If necessary, RTE will undertake actions to replenish these required margins.

3. In accordance with paragraph 2 of Article 158 of SOGL, RTE shall specify the control quality requirements for FRR reserve capacity providing units:

   a. The objective of FRR reserve capacity is to restore exchanges on the RTE LFC block in less than 15 minutes (i.e. frequency restoration time), after a contingency less than or equal in MW to the positive or negative dimensioning incident, in accordance with paragraph 9 of article 152 of SOGL. In its security model, RTE therefore considers all contracted or free reserve capacity with an activation time of less than or equal to 15 minutes to be FRR reserve capacity. For contracted FRR capacity (defined in points 2 and 3 of Article 5), the activation lead times are defined respectively in the Market Rules for Frequency Ancillary Services and in the Market Rules for Manual Frequency Restoration and Complementary Reserves.

   b. Furthermore, to deal with emergency situations corresponding to multiple contingencies within the LFC block, RTE may define additional requirements to obtain shorter activation times than in normal situations for FRR reserve capacities (aFRR or mFRR). These requirements are described respectively for the reserve capacity concerned in the Market Rules relating to Scheduling, the Balancing Mechanism and Frequency Ancillary Services, and in the Market Rules relating to Manual Frequency Restoration and Complementary Reserves or, for the connection of generation units, in the reference technical documentation.

   c. Generally speaking, FRR reserve capacity, whether contracted or free, must meet the certification requirements defined in the Market Rules for Scheduling, the Balancing Mechanism and Frequency Ancillary Services, and in the Market Rules for Manual Frequency Restoration and Complementary Reserves.

SECTION 4: FINAL PROVISIONS

ARTICLE 13: PUBLICATION AND IMPLEMENTATION OF THE RTE LFC BLOCK AGREEMENT PROPOSAL

1. In accordance with Article 119 and paragraph 3, point e) of Article 6 of the SOGL Regulation, the methodologies and conditions of Section 2 of this RTE LFC Block Operational Agreement will enter into force three (3) months after the regulatory authority has approved the proposal, as per paragraph 2 of Article 119 of the SOGL Regulation.
2. In accordance with articles 184 and 8 of SOGL, all the methodologies and conditions of the RTE LFC block operational agreement must be Notified to the competent regulatory authority and published for market participants. RTE will publish the content of this LFC block agreement no later than one week after the entry into application of section 2 of this agreement.

ARTICLE 14: LANGUAGE

The official language of this proposal for the methodologies and conditions of the LFC RTE block operational agreement is French.

ANNEXE 1 AFRR AND MFRR CAPACITY DIMENSIONING RULES IN FORCE UNTIL RT_{19}

Until RT_{19}, the following rules shall apply for calculating aFRR and mFRR capacity requirements:

1. The need for aFRR and mFRR is asymmetrical, differentiating between upward and downward requirements;
2. The need for aFRR is calculated using a statistical method, as per the rules described in paragraph 1.
3. The mFRR requirement is constant and set at the difference between the positive or negative dimensioning incident and the minimum aFRR requirement defined in paragraph 1, in accordance with the rules described in paragraph 2.

1. Calculation of the aFRR requirement

The following aFRR capacity dimensioning rules apply.

1. RTE calculates the requirement for secondary reserve or aFRR reserve capacity for the France LFC block by applying a statistical method in accordance with paragraph 1, point h) of Article 119 of the SOGL Regulation according to the following criteria:

   The method is based on the historical open-loop control deviation $(\Delta E_{bo})^2$, which corresponds to the aFRR requirement. This varies throughout the day and depends on variations in consumption, exchanges and production schedules. It uses a statistical approach.

   a. The aFRR requirement must ensure that:
      i. the upward requirement is greater than the absolute value of the first percentile of the difference between the open-loop control deviation (ΔE_{bo}) averaged over 1 minute and the open-loop control deviation averaged over 30 minutes of the control block;
      ii. the downward requirement is greater than the 99th percentile of the difference between the open-loop control deviation (ΔE_{bo}) averaged over 1 minute and the open-loop control deviation averaged over 30 minutes of the control block.

$$\Delta E_{30} = Moy_{1\ minute}\ (\Delta E_{bo}) - Moy_{30\ minutes}\ (\Delta E_{bo})$$

   b. The aFRR requirement is recalculated regularly, at least every 6 months.
   c. The minimum aFRR requirement is 500 MW upward and downward.

2. The following parameters are used to calculate the aFRR requirement:
   a. The time interval used to define the requirement is 4 hours.
   b. Dimensioning is based on half-yearly profiles.
   c. One year of data is taken into account.

[2] Open loop control deviation (ΔE_{bo}): control deviation calculated after mFRR activations but without aFRR activation.

3. In addition, in its contracting, RTE takes into account the "over-scheduling[3]" in historical aFRR observed resulting from adjustments in mFRR contracted upward to ensure the balance between generation and consumption and which may generate a scheduling surplus in the final dispatch schedule of ancillary services.

   The over-scheduling value taken into account is equal to the average of the over-scheduled volumes (average over the requirement definition interval of the average over-scheduled volumes for 30-minute intervals) for the time intervals between 04:00 and 20:00 and is equal to the minimum of the over-scheduled volumes (of the averages of the over-scheduled volumes over the 30-minute time intervals) from 00:00 to 04:00 and from 20:00 to 24:00.

   Over-scheduling will be calculated twice a year:
   - On 1st of September of year N, for application on 1st of October of year N: RTE calculates the aFRR requirement for winter half-year N/N+1, defined as running from October of year N to March of year N+1, on the basis of data for winter half-year N-1/N, defined as running from October of year N-1 to March of year N.
   RTE calculates the annual average of the over-scheduling resulting from the adjustments made to ensure balance between generation and consumption over the period from 1st July of year N-1 to 1st July of year N.

   - 1st March of year N, for application on 1st April of year N:
   RTE calculates the aFRR requirement for summer half-year N, defined as April to September of year N, on the basis of data for summer half-year N-1, defined as April to September of year N-1.
   RTE calculates the annual average over-scheduling resulting from adjustments made to ensure balance between generation and consumption over the period from 1st January of year N-1 to 1st January of year N.

   The data used to calculate the over-scheduling are the volumes of upward mFRR adjustments published on the RTE website, applying a coefficient of 1/7 (i.e. 1 MW of aFRR for 7 MW of active power). A coefficient (between 0 and 100%) will also be applied to ensure that RTE's needs are covered by the contracted volumes and that the observed over-scheduling is taken into account.

   On a time interval, the volume of aFRR to be contracted upward and downward will be the aFRR requirement calculated in accordance with paragraphs 1 and 2, minus the value of the over-scheduling.

   In addition, the methods for calculating the parameters linked to over-scheduling (calculation of the average over-scheduling in the final dispatch schedule and the coefficient applied) may be modified without revision of the Block Agreement following feedback on the impact of the over-scheduling on secondary reserve contracting. Feedback will be shared with the Reserve Providers. Following consultation, RTE will Notify CRE of the new methods for calculating the parameters by letter. If approved by CRE, the new methods for calculating the parameters will be updated on the RTE website.

[3] Over-scheduling: difference between the volume requested by RTE at the time of contracting and the volume actually available by totalling all the final dispatch schedules of the scheduled units.

2. Calculation of the mFRR requirement

1. By creating mFRR reserves, RTE must be able to comply with the requirements set out in the SOGL Regulation, which stipulates that:
    a. after a contingency less than or equal in MW to the positive or negative dimensioning incident, the transmission system operator must be able to restore exchanges in its LFC block in less than 15 minutes (i.e. frequency restoration time), in accordance with paragraph 9 of Article 152 of SOGL;
    b. that the dimensioning of FRR reserve capacity available in less than 15 minutes must be at least permanently equal to the dimensioning incident in accordance with paragraphs 2, points e) and f) of Article 157 of SOGL.

2. RTE must therefore have mFRR reserves contracted upwards for the management of short-term contingencies and dimensioned as follows:
    a. A volume in MW of mFRR reserve capacity that can be activated upwards in less than 15 minutes and for at least 2 hours (corresponding to the frequency restoration reserve), as being equal to the difference between the positive dimensioning incident and the minimum volume of aFRR reserve capacity defined in Annex I;
    b. These frequency restoration reserves must also be able to cover at least four occurrences each day of a contingency equivalent to the positive dimensioning incident.
    c. Frequency restoration reserve products are described in the Market Rules relating to Manual Frequency Restoration and Complementary Reserves.
3. Until RT_{17}, RTE has no dimensioning rules for contracting mFRR reserves downward in addition to aFRR reserve capacity:
    a. RTE meets the requirement to cover the negative dimensioning incident relating to paragraph 2, point f) of article 157 of SOGL by contracting downward a minimum of 500 MW of aFRR capacity, supplemented by free downward bids as part of the monitoring of the required downward margins.
    b. This process is based on RTE's safety model for monitoring margins on the system and on Generator practices of permanently offering available capacity to the balancing mechanism, enabling RTE to have access to free (non-contracted) bids of mFRR reserve capacity to cover the negative dimensioning incident, amongst other things.
4. After $RT_{17,}$, which will be communicated to Balancing Service Providers with one month's notice, RTE must have contractually agreed downward mFRR reserves for managing short-term contingencies, dimensioned as follows:
    a. A volume in MW of mFRR reserve capacity that can be activated downward in less than 15 minutes (corresponding to the frequency restoration reserve), as being equal to the difference between the negative dimensioning incident and the minimum volume of aFRR reserve capacity defined in Annex I;
    b. The frequency restoration reserve product is described in the terms and conditions of the Market Rules relating to Manual Frequency Restoration and Replacement Reserves;
    c. This downward reserve is contractually agreed and guaranteed for all contractually agreed periods;

d. The volume contracted by RTE will gradually increase, until it reaches the dimensions described above.

ANNEXE 2 FRR, AFRR AND MFRR CAPACITY DIMENSIONING RULES IN FORCE AFTER DATE RT_{19}

After RT_{19}, the following rules shall apply for calculating the FRR, aFRR and mFRR requirement:

1. The FRR, aFRR and mFRR requirements are asymmetrical, differentiating between upward and downward requirements;
2. The FRR and aFRR requirements are calculated using a statistical method, in accordance with the rules described in paragraphs 1 and 2, respecting the framework defined by article 157 of SOGL;
3. The mFRR requirement is deducted from the FRR and aFRR requirements, in accordance with the rules described in paragraph 3.
4. The following parameters are used to calculate the FRR, aFRR and mFRR requirements:
    a. The resolution of the time interval used for calculation is 4 hours;
    b. dimensioning is based on seasonal profiles (summer/winter);
    c. The calculation is based on historical data for year A-1 over a reference period: this reference period corresponds to the period equivalent to the calculation period for year A-1.

1. Calculation of the FRR requirement

1. The FRR requirement is calculated by RTE using a statistical method based on analysis of the system's real-time imbalance history, calculated in MW at 1-minute intervals according to the following formula:

$$Déséquilibre\ système\ temps\ réel = \Delta E_{bo} - Ajustements\ SPE - Besoin\ satisfait\ MARI$$

Where:

a. ΔE_{bo}, the open loop control deviation, corresponding to the aFRR requirement calculated in real time by RTE.
b. $Ajustements\ SPE$, the aggregated volume of adjustments made on the Specific Balancing Mechanism. Volumes activated upward are counted positively, volumes activated downward are counted negatively;
c. $Besoin\ satisfait\ MARI$, the sum of Scheduled Activation (SA) and Direct Activation (DA) requirements expressed by RTE and met by the MARI platform. Upward requirements are counted positively, downward requirements are counted negatively.

The real-time system imbalance is insensitive to imbalances relating to the processing of national and international congestion (countertrading). The system imbalance is also unaffected by the network flexibility actions implemented by the DSO before the neutralisation lead time.

2. In accordance with paragraph 2 of Article 157 of the SOGL:
    a. For a 4-hour time interval, the upward FRR requirement for the France LFC block is equal to a maximum of:
        i. The positive dimensioning incident of the France LFC block

ii. The absolute value of the 1st percentile of the real time system imbalance calculated over the reference period for the 4 hour period under consideration.

b. For a 4-hour time interval, the downward FRR requirement for the France LFC block is equal to a maximum of:

iii. The negative dimensioning incident of the France LFC block

iv. The 99th percentile of the real-time system imbalance calculated over the reference period for the 4-hour period under consideration.

2. Calculation of the aFRR requirement

1. The aFRR requirement is calculated by RTE by applying a statistical method based on the analysis of differences in the open-loop control deviation ΔE_{bo} at a 1-minute interval with its mean value:

$$\Delta E_{Pas\ \Delta E} = Moy_{1\ minute}\ (\Delta E_{bo}) - Moy_{Pas\ \Delta E}\ \ (\Delta E_{bo})$$

The time interval used to calculate the mean $Pas\ \Delta E$ is set at 30 minutes. The value of $Pas\ \Delta E$ is subject to change and may be set at 15 minutes in consultation with CRE, on joint observation by RTE and CRE of sufficient development of mFRR bids with a DOmin less than or equal to 15 minutes. The change in the value of $Pas\ \Delta E$ will be communicated to CRE within a reasonable time prior to its application.

2. The aFRR requirement is equal to:
   a. Upward, the maximum of:
      i. The absolute value of the 1st percentile of the difference between the open-loop control deviation and its mean value over the reference time interval.
      ii. A threshold value set at 500 MW
   b. Downward, the maximum of:
      i. The 99th percentile of the difference between the open-loop control deviation and its mean value over the reference time interval.
      ii. A threshold value set at 500 MW
3. Until date AB_{01}, which will be Notified with one month's notice, RTE will continue to take account of the over-scheduling calculated in accordance with point 3 of paragraph 1 of Appendix 1. After AB_{01}, the over-scheduling will no longer be taken into account when calculating the aFRR requirement.
4. In consultation with CRE, RTE may increase the aFRR requirement beyond the value calculated according to the rules described above. If necessary, RTE will Notify CRE of a proposal to increase these volumes.
5. RTE contracts its need for aFRR in accordance with the procedures described in the Market Rules for Frequency Ancillary Services.

3. Calculation of the mFRR requirement

1. The mFRR requirement is equal:

a. Upward, to the difference between the upward FRR requirement calculated according to the rules described in paragraph 1 and the upward aFRR requirement calculated according to the rules described in paragraph 2

b. Downward, to the difference between the downward FRR requirement calculated in accordance with the rules described in paragraph 1 and the downward aFRR requirement calculated in accordance with the rules described in paragraph 2.

2. RTE contracts its mFRR requirement in accordance with the procedures described in the Market Rules relating to Manual Frequency Restoration and Complementary Reserves.