



Biennial report on Electricity Balancing Regulation implementation at the Spanish electric system

Dirección General de Operación

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1. Executive Summary

In accordance with Article 60 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a Guideline on Electricity Balancing (hereinafter referred to as "EB Regulation"), at least once every two years, each TSO shall publish a report on balancing covering the previous two calendar years. Thus, this Spanish EB Regulation report describes the main actions that are being taken in order to adapt the Spanish system to EB Regulation.

The main ongoing EB Regulation actions in the Spanish system are the following:

- Regulatory and technical SCADA/IT and settlement changes already made for the go-live of both TERRE (go-live already accomplished at Q1 2020) and IGCC platform (go-live scheduled for Q2 2020).
- Regulatory and prequalification tests adaptation in order to allow demand facilities, both in an individual and in aggregated way, to participate in balancing services markets since Q3 2020 (once approved corresponding operating procedures), and to promote any type of generation technology to provide balancing services. Participation of storage different than pumping units in balancing services markets will require further regulatory developments yet to come in the Spanish regulation.
- Adaptation of IT, metering (adaptation of XB metering system to 15 minutes resolution) and settlement systems and the associated regulatory changes are being developed and implemented in order to evolve towards financial settlement of unintended exchanges (Project FSkar) among electric systems. From a European regulatory point of view, submission of a reviewed FSkar proposal to NRAs (adapted to NRAs' RfA) by TSOs has been carried out in March 2020. Considering that FSkar should be implemented 12 months after the FSkar proposal approval by NRA's, expected implementation for FSkar Methodology is Q2 2021.
- IT system changes to adapt IT scheduling system to 15 minutes granularity. This internal project is key for future participation at MARI platform and for future 15 minutes modulation of BSPs' bids participating at RR LIBRA/TERRE platform.
- Starting of a project to adapt Spanish aFRR scheme towards a common merit order list (CMOL) activation approach instead of the current approach based on a pro-rata activation for the aFRR energy.
- Update of national regulation to eliminate caps and floors for balancing energy markets. Additionally, a public consultation on the adaptation of Spanish Operating Procedures to the Spanish Terms and Conditions (T&C) recently approved by the Spanish NRA (CNMC) was launched on March 23rd, 2020.

The current Spanish EB Regulation roadmap is available at the following link publicly available (in Spanish):

<https://api.esios.ree.es/documents/561/download?locale=es>

<https://www.esios.ree.es/en/page/information-about-implementation-of-market-network-codes>



2. TSO report on balancing according to EB Regulation Art. 60

Article 60 of EB Regulation defines the following information to be included in the TSO report on balancing that TSOs shall publish at least every two years covering the previous two calendar years:

2.1 Information concerning the volumes of available, procured and used specific products

All balancing products currently used in the Spanish Electric System can be adapted to fit the main characteristics of standard products established in the corresponding Implementation Frameworks (RR, mFRR and aFRR), so, the use of specific products is not envisaged by now at the Spanish electric system. Nevertheless, approved national T&C allow the future establishment of specific products in the Spanish electric system, if needed. An assessment of possible specific needs will be faced every year at the process of revision of the previously approved T&C (i.e., by December 2020).

2.2 Summary analysis of the sizing of reserve capacity

Currently, the FRR reserve capacity in the Spanish system (manual mFRR and automatic aFRR) is determined accordingly to the technical criteria defined at the following technical references:

- The Spanish NRA (CNMC) has recently approved a technical guideline applicable in Spain “*Metodología y condiciones incluidas en los acuerdos operativos de bloque de Control Frecuencia Potencia en el sistema eléctrico peninsular español*”, methodology in which are defined the criteria to determine the reserve capacity required in the Spanish electric system. This document is available at the following sites:

https://www.cnmc.es/sites/default/files/2711779_0.pdf

<https://www.esios.ree.es/es/pagina/codigos-red-operacion>

- Finally, the criteria set forth in the above documents are also taken into account and incorporated in the corresponding Spanish Operating Procedure 1.5 “*Establecimiento de la reserva para la regulación frecuencia-potencia*”:

https://www.ree.es/sites/default/files/01_ACTIVIDADES/Documentos/Procedimiento-Operacion/BOE-A-2019-15049_%20Comision_Nacional_Mercados_y_Competicion.pdf

As a summary, the main criteria to compute required FRR reserve levels (aFRR and mFRR) are the following ones:

- Demand forecast and associated variation along the day (aFRR).
- Load, wind and solar forecast uncertainties (aFRR and mFRR).
- Uncertainty about when inflection points at demand daily curve happen (aFRR).
- N-1 failure at the Spanish system (apply for both aFRR and mFRR dimensioning)
- Current level of interconnection capacity with neighbouring systems (aFRR and mFRR).
- Criteria established at Technical Agreements of ENTSO-E Continental Europe interconnected TSO’s.
- Special events in the Spanish system (strikes, extreme climate conditions, ...)



2.3 Costs and Benefits Analysis (CBA), and the possible inefficiencies and distortions of having specific products

Currently the total available bid volume of RR energy in Spanish Electric system participate in the RR European LIBRA platform. As no specific products are used by now in the Spanish electric system, there are neither benefits nor costs or inefficiencies or distortions associated to the existence of specific products for balancing services.

2.4 Analysis of the opportunities for the exchange of balancing capacity and sharing of reserves

REE has participated in the drafting team that has prepared the document *“All TSOs’ proposal for a methodology for a co-optimised allocation process of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves”*, recently consulted by ACER.

SWE TSOs agreed on their interest on preparing a joint regional methodology for cross border capacity for exchanges and sharing of balancing reserves, pursuant EB Regulation articles 41 and 42, leading to the most efficient cross border interconnection management between the bidding zones of SWE. Nevertheless SWE TSOs intentions, EB Regulation defines tight deadlines (including a one-month public consultation) which gave SWE TSOs a very short period of time to prepare the methodology proposal, not enabling the consideration of all possible effects that national Terms and Conditions for balancing pursuant EB Regulation article 18 might have on the balancing capacity market design in the SWE region (T&C for Spanish Electric system were approved in December 2019).

The Spanish – French interconnection was congested up to 67.3 % of the hours in 2019 in the France to Spain direction. This means that exchange/sharing upward reserves with our neighboring system will be challenging considering the current interconnection capacity levels in the Spanish – French interconnection.

Regarding the Portugal-Spain interconnection, where 94,8% of the hours in 2019 there was no congestion in the border, interconnection capacity could be used for the exchange of balancing capacity and sharing of reserves. Nevertheless, as the Portuguese and the Spanish systems are quite similar in terms of renewable energy penetration and climate conditions, deviations for wind and solar forecasted production can affect simultaneously to both Iberian systems.

REE is willing to continue both on further designing balancing capacity markets and studying the opportunities and benefits of sharing such reserves according to regional methodologies, after enough experience will be gained after different balancing energy platforms go-live.

2.4.1 Qualitative impact on Day Ahead market spread regarding potential reservation of cross-zonal capacity for balancing timeframe

In relation to FR-ES interconnection, the increase of the already high day-ahead market spread associated to a potential reservation of cross-zonal capacity for balancing timeframes requires the previous reinforcement of FR-ES interconnection before considering the possible reservation of cross-zonal capacity at this interconnection for balancing timeframe.

With regards to PT-ES interconnection although the high level of integration of Spanish and Portuguese Bidding Zones (BZs) in Day Ahead timeframe leads to a potentially low impact of reservation of transmission capacity for balancing reserves in the price formation in Day-Ahead Market, the significant amount of transmission capacity currently available in balancing timeframe reduces the interest of reserving capacity in Day-Ahead timeframe for balancing purposes. Analysis of opportunities for the exchange of balancing capacity and sharing of reserves with other interconnected electric systems will be evaluated in the future taking into account these considerations.



3. Adaptation of the Spanish System to EB Regulation

3.1 Terms and Conditions for BSPs

Spanish Terms and Conditions on balancing (T&C), according to Article 4 of EB Regulation, have been recently approved (December 11th, 2019) and officially published on December 23rd, 2019, at next official web site (in Spanish):

<https://api.esios.ree.es/documents/560/download?locale=es>

The general REE web site provides updated information on the implementation process of Network Codes in the Spanish electric system:

<https://www.esios.ree.es/es/pagina/informacion-sobre-implementacion-de-los-codigos-de-red-de-mercados>

According to Spanish T&C, the main actions that are being adopted in order to align Spanish electric system with EB Regulation roadmap are the following ones:

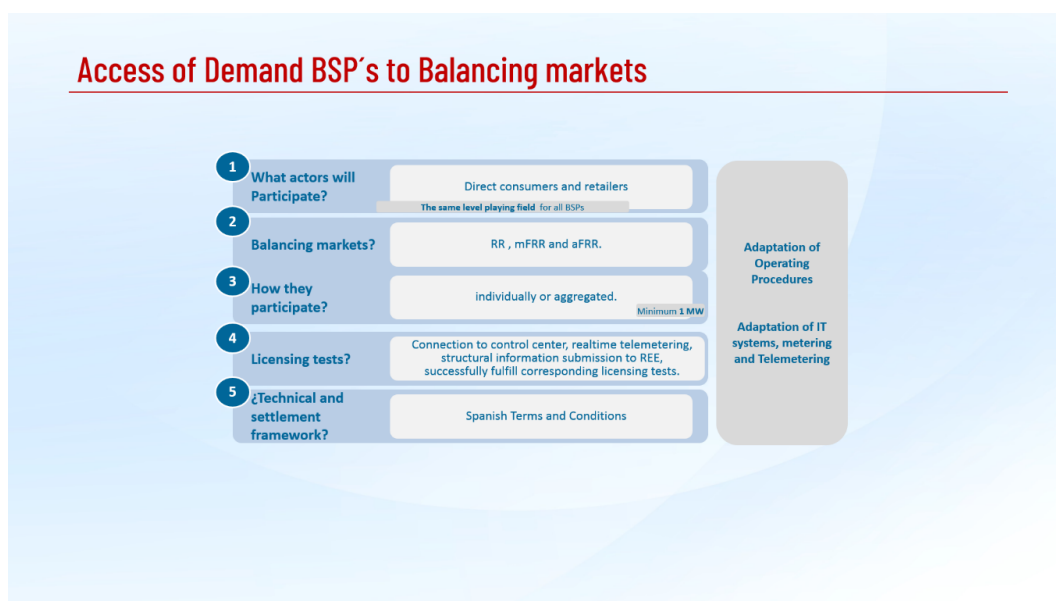
3.1.1 Regulatory changes to allow Participation of Demand and Storage on Balancing services

Adaptation of corresponding Spanish Operating Procedures and qualification tests (defined in a new operating procedure) are being carried out in order to allow demand facilities to participate at balancing markets (products RR, mFRR and aFRR), and to fit approved Spanish Terms and Conditions (T&C). The entry into force of these adapted operating procedures is expected by Q3 2020 (after corresponding public consultations).

Thus, the specific regulatory changes to promote the participation of demand facilities in balancing services, are the following ones:

- Minimum bid capacity at qualification tests ≥ 1 MW (instead of previous minimum value =10 MW).
- Possibility of aggregation of demand and storage facilities (the participation of storage installations in balancing services requires development of additional regulation in Spain).

Next figure illustrates the general process (technical and regulatory) for a demand actor to become a BSP:





The introduction in the Spanish system of demand independent aggregator, acting as BSPs, is yet to be defined under a regulatory point of view in Spain.

Also, the go-live for future participation of storage installations different than pumping units in balancing services requires a complementary development of the regulation in Spain.

3.1.2. Regulatory changes to further promotion of any generation technology acting as a BSP at balancing services

Spanish Operating Procedures were already adapted in December 2015 in order to promote that all the generation units could participate in the balancing services, both in an individual and in aggregated way, at the same level playing field, disregarding the type of technology.

Now, after the Terms and Conditions (T&C) approval, the minimum bid capacity for a BSP at qualification tests has been reduced to 1 MW, according to minimum size of bids established in the Implementation Frameworks (IF) of RR, mFRR and aFRR standard products. Also, the possibility of aggregation of generation facilities of the same technology, in order to provide balancing services, is being applied in the Spanish electric system since February 2016.

An additional condition has been established for the providers of the aFRR balancing product (with bid capacity ≥ 1 MW): they should be integrated in an aFRR portfolio with a size ≥ 200 MW (aggregated rated power) of generation units that have fulfilled aFRR qualification tests. This additional condition of portfolio size has been established in order to take into account the special characteristics of aFRR portfolios and secondary regulation provision in the Spanish electric system.

3.1.3. Balancing energies negative pricing

A price range of [+ 99,999 €/MWh and -99,999 €/MWh] is considered for RR balancing energies (since TERRE go-live) and price caps and floors will also be eliminated for FRR energies, once the corresponding Spanish Operating Procedures are adapted to the already approved Spanish Terms and Conditions for Balancing. The proposal of these adapted Spanish Operating Procedures was published for consultation on March 23rd, 2020.

3.2 Terms and Conditions for BRPs

The ongoing changes in order to adapt Spanish Balancing Responsible Parties (BRPs) treatment to EB Regulation are the following:

- Since February 6th 2020, the number of possible positions of BRPs in the Spanish system have been reduced from 3 positions (a) Generation out of the aFRR portfolio, b) Generation inside the aFRR portfolio, and c) Demand) to 2 positions (a) Generation and b) Demand).
- Regarding evolution from Imbalance Settlement Period (ISP) =60 minutes towards ISP=15 minutes, a public consultation was carried out (from January 15th 2020 until February 29th 2020) in order to get stakeholders feedback for the selection of the most suitable timing scenario to carry out the transition from ISP=60 towards ISP=15 minutes:
 - **Scenario 1:** Q2 2021 (ISP = 15 minutes implemented at the same time as changing Spanish balancing scheduling system towards 15 minutes)
 - **Scenario 2:** ISP=15 minutes in Q4 2023 (intermediate scenario).
 - **Scenario 3:** ISP=15 minutes since January 1st 2025 (thus, this scenario would use the maximum transitory exemption defined at EB Regulation).



- Imbalance settlement pricing scheme has already been adapted to include price signals coming from both TERRE and IGCC processes (including possibility of negative pricing), after respective go-live of both processes in the Spanish Electric System.
- Further changes in the Spanish imbalance settlement pricing scheme will be accomplished after approval by ACER of referred proposal on Imbalance Settlement Harmonization (ACER approval expected by July 14th, 2020).

Finally, additional regulatory changes will be adopted in order to allow BRPs to carry out re-schedules among them complementing intraday trades, in order to minimize Imbalance Settlement Price exposure.

4. Adaptation of Spanish System to European balancing platforms: Imbalance Netting process

4.1. REE participation at IGCC governance structure

IGCC Cooperation Agreement signed by REE in September 2019, as non-operational member (REE go-live at IGCC is expected by Q2 2020, subject to the availability of the communication line between REE and Transnet BW).

4.2 Ongoing regulatory changes related to Imbalance Netting

Updating of Operating Procedure P.O. 7.2. “Regulación secundaria” (aFRR), officially published on December 30th, 2019: It includes a new annex 5 focused on Imbalance Netting process and its technical and remuneration implications at the Spanish system.

Updating of Operating Procedure P.O. 14.4. “Derechos de cobro y obligaciones de pago por los servicios de ajuste del sistema” (focused on TSO-BSP/BRP’s settlement) → It has been adapted in order to incorporate Imbalance Netting settlement in the computation of the Imbalance Settlement Price.

Updating P.O. 14.6. “Liquidación de intercambios internacionales no realizados por sujetos del mercado” It has been adapted in order to incorporate the TSO-TSO settlement associated to the Imbalance Netting process.

4.3 SCADA and IT changes

SCADA and IT systems at REE have already been adapted for the following purposes:

- Incorporation at the Spanish LFC controller of correction signal P_{corr} coming from Imbalance Netting platform (this P_{corr} signal accounts for real time netting potential between TSOs, as long as they have real time balancing requirements of opposite direction and there is available cross border capacity).
- Development of the interface between SCADA and IT scheduling system. For instance, IT scheduling system submits updated Available Transmission Capacity (ATC) values to SCADA system and SCADA system sends back to IT system IGCC matched energies for a) Imbalance Netting TSO-TSO settlement and for b) unintentional deviation computation scheme between REE and Swissgrid (South Coordination Center).
- Submission, on a monthly basis, of REE opportunity prices (associated to avoided aFRR energy activation) to IGCC platform and to receive detailed TSO-TSO settlement computation.
- Communication infrastructure is currently in implementation process (2 redundant point to point communication lines are needed between REE and the 2 Transnet BW control centers, where the Imbalance Netting platform is located).



5. Adaptation of Spanish System to European balancing platforms: Replacement Reserve platform (LIBRA)

5.1 Ongoing regulatory changes related to participation of Spanish System at Replacement Reserve platform

The Replacement Reserves Implementation Framework (RRIF) was approved by RR NRAs on January 15th, 2019. Thus, RR TSOs had to implement and make operational the RR platform (LIBRA platform developed within TERRE project) before January 15th, 2020. A transitory exemption of 9 months for joining RR platform was granted by CNMC to REE (i.e. until October 15th, 2020).

The integration of REE at LIBRA platform has implied the transition from a national RR balancing energy market towards a European market, with all associated advantages of synergies due to netting of opposite RR needs in the different electric systems and a more liquid/competitive market for the RR balancing product. It also implies the substitution of BALIT platform (based on bilateral balancing energy exchanges between REE and REN, and REE and RTE) by LIBRA platform.

Further details of RR 9-month transitory exemption granted by from the Spanish NRA (CNMC) can be found at the next link:

<https://www.cnmc.es/expedientes/dcoorde00218>

The adapted Spanish Operating Procedures (officially published last December 30th, 2019) due to integration of Spanish System at LIBRA platform are the following ones:

- **New Operating Procedure P.O. 3.3.** *“Procedimiento de operación para la aplicación del proceso europeo de activación e intercambio de energías de balance del producto RR en el sistema eléctrico peninsular español”*. This operating procedure constitutes the transit from national RR Energy Market towards European RR Market.
- **Adapted Operating Procedure P.O. 14.4** *“Derechos de cobro y obligaciones de pago por los servicios de ajuste del sistema”* (focused on TSO-BSP/BRP’s settlement)→ It is adapted for pricing both BSP’s and BRP’s according to new RR processes.
- **Adapted Operating Procedure P.O. 14.6** *“Liquidación de intercambios internacionales no realizados por sujetos del mercado”*. It is adapted in order to incorporate RR process at TSO-TSO settlement processes.
- **Adapted Operating Procedure P.O. 3.1** *“Programación de la generación”*

These operating procedures have entry into force on March 3rd, 2020, date when REE started the use of the European LIBRA platform.

Regarding RR contracted/free bids treatment, RR bids from Spanish electrical system are free bids type.

The results of the use of European LIBRA platform for the balance of the Spanish electric System are being published at the European Transparency Platform (<https://transparency.entsoe.eu>) and at the web site of the Spanish System Operator (www.esios.ree.es).

5.2. REE participation at TERRE governance structure

REE has already signed a Cooperation Agreement with other RR TSOs in order to establish rights and obligations for the operation of the European RR Platform.



5.3 IT changes at REE due to integration at LIBRA

- IT REE system has already been adapted for RR standard product. In a first step, Spanish BSPs will only be allowed to submit hourly bids. Once 15 minutes scheduling will be implemented at the Spanish electrical system, which is expected by Q2 2021, 15-minute bids will be allowed at RR allocation.
- At REE go-live in TERRE, only inelastic RR needs will be considered. Later on, in a second step, also elastic needs could be used subject to additional regulatory changes.
- REE IT systems are prepared for Spanish system disconnection from RR platform in case of platform unavailability. Under this scenario, RR balancing energy, if required, would be substituted by the use of mFRR and aFRR balancing energies.

6. Adaptation of Spanish System to European balancing platforms: aFRR platform (PICASSO)

6.1 Ongoing regulatory changes related to participation of Spanish System at PICASSO platform

After ACER approval of aFRR Implementation Framework (IF) on January 24th, 2020, the deadline for aFRR platform go-live is July 2022 (30 months after IF approval). It is envisaged that Spanish system will request a transitory exemption of 2 years to join PICASSO platform, due to the special characteristics of Spanish current aFRR scheme that will imply deep technical and regulatory changes. Among others:

- A new aFRR balancing market is required (currently no aFRR energy bids exist in the Spanish system).
- The aFRR energy needs to be activated through a common merit order list at the LFC controller.
- The settlement scheme must be adapted to an optimization cycle granularity.

Beside this, the current Full Activation Time (FAT) for aFRR energy in the Spanish System is already compliant with target value of 5 minutes.

6.2. REE participation at PICASSO governance structure

REE will sign three agreements in order to formalize the contractual framework with all the TSOs in the framework of the use of PICASSO platform:

- Principal Agreement: Overriding principles for all platforms, to enable the incorporation of cross-platform functions and future flexibility.
- PICASSO Cooperation Agreement: It will complement the Principal Agreement and it will set out the mutual rights and obligations of the Parties with respect to the operation and the governance of the Platform.
- PICASSO Common Service Provider Agreement: It will set forth the mutual rights and obligations of all the Parties regarding the development, hosting and monitoring of the IT solution.

6.3 Future SCADA and IT changes

- An internal project in the Spanish system has already been launched to carry out the necessary IT and regulatory developments with the following objectives:



- Build up a new secondary energy market to change the BSP's aFRR request from pro-rata based towards market-based activation (regulatory/IT changes).
- Changing the technical characteristics (SCADA/IT changes) of the Spanish aFRR system accordingly to market-based approach.
- Splitting of aFRR reserve market at a) upward and b) downward reserve (currently, in the Spanish market there is a single upward/downward reserve with a single price for both, upward and downward reserves).
- Design of fall-back mechanisms in case of PICASSO platform unavailability.

7. Adaptation of Spanish System to European balancing platforms: mFRR platform (MARI)

7.1 Ongoing regulatory changes related to participation of Spanish System at MARI platform

After ACER approval of mFRR Implementation Framework (IF) on January 24th, 2020, the deadline for mFRR platform go-live is July 2022 (30 months after IF approval).

7.2. REE participation at MARI governance structure

REE will sign in Q2 2020 the Principal Agreement covering overriding principles for all platforms, to enable the incorporation of cross-platform functions and future flexibility. This Agreement sets out the framework the Parties wish to cooperate within, the mutual rights and obligations of the Parties with respect to the development, maintenance and operation of the Platforms.

In addition, a MARI Cooperation Agreement will be signed to complement the Principal Agreement and to set out the mutual rights and obligations of the Parties with respect to the operation and the governance of the Platform.

Finally a MARI Common Service Provider Agreement will set forth the mutual rights and obligations of the Parties regarding the development, hosting and monitoring of the IT solution.

7.3 Future SCADA and IT changes

The current developments in order to join MARI platform in the future are the following ones:

- Adaptation of IT scheduling systems to 15 minutes scheduling time (key issue to deal with future MARI mFRR bids scheme)
- Adaptation of mFRR energy bidding process, and in particular the caps and floors, to Pricing Proposal approved by ACER on January 24th, 2020 (+ 99,999 €/MWh and -99,999 €/MWh).
- REE will consider back-up mechanisms in case of MARI platform unavailability.
- Elastic demand scheme will be designed for mFRR scheduled activation type requirement.
- Possible design of a local joint bids box valid for both LIBRA/TERRE (RR), and MARI (mFRR) processes, as long as a given BSP is able to provide both types of services.
- Possibility to complement standard mFRR MARI product with specific mFRR local product will be analyzed in the future.
- An incentive mechanism for BSP's to fulfill the service will be also envisaged.