

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

Process Description for the Participation of Providers with Facilities in Luxembourg in the German and European Reserve Market for Automatic Frequency Restoration Reserve (aFRR) and Manual Frequency Restoration Reserve (mFRR) via the Platform <http://www.regelleistung.net/>

BSP: Balancing Service Provider

BRP: Balance Responsible Party

LFC-Zone: Load Frequency Control Area

PQ: Prequalification

TSO: Transmission System Operator

DSO: Distribution System Operator

TU: Technical Unit

BGC: Balancing Group Coordinator

RU: Reserve Units

RG: Reserve Groups

(C)MOL: (Common) Merit Order List

1. Definition:

TU: Technical Unit

A "Technical Unit" (TU) is an electricity generation facility, consumption unit, or electricity storage unit (as a combination of electricity generation and consumption units) whose feed-in or withdrawal power is measured and meets the requirements described in these PQ conditions.

Control Reserve connecting TSO:

"Control reserve connecting TSO" refers to the TSO responsible for the monitoring area in which a reserve unit or group is connected. For technical units that are connected to Creos Luxembourg S. A. regardless of their connection network or voltage level, Amprion GmbH assumes the role of Creos Luxembourg S. A. as the control reserve connecting TSO.

Balancing Service Provider:

A "Balancing Service Provider" is a legal entity that is legally or contractually obligated to provide FCR, FRR, or RR from at least one reserve unit or group.

Reserve Unit:

A "Reserve Unit" refers to one or more aggregated electricity generation facilities and/or consumption units that have a common grid connection point and meet the requirements for providing FCR, FRR, or RR.

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

Reserve Group:

"Reserve Group" refers to aggregated electricity generation facilities, consumption units, and/or reserve units that have different grid connection points and meet the requirements for providing FCR, FRR, or RR.

Balancing capacity Pool:

The "Balancing capacity Pool" is the part of a provider's facility pool used for delivering a type of reserve service.

Pool of technical units:

A provider's "Pool of technical units" consists of all TUs of a provider used to provide at least one type of control reserve service.

2. Introduction:

The load-frequency control in the supply area of the Luxembourg electricity transmission system operator Creos Luxembourg is not carried out by Creos itself but by Amprion, one of the four German transmission system operators (TSOs) with which Creos forms a common control area (LFC-Area). Therefore, Creos is not responsible for procuring and deploying balancing reserves but only for balancing energy settlement with the Luxembourg balance responsible parties (BRPs). Amprion procures the necessary balancing reserves in the various control reserve types (FCR¹, aFRR, mFRR) through the relevant platform for balancing energy.

Since June 1, 2020, Luxembourg network customers have been able to participate in the balancing energy market for FCR.

The next step is to also enable the participation of control reserve providers with facilities in Luxembourg in the aFRR and mFRR balancing market.

This document outlines the concept whereby reserve providers (BSP) can bundle facilities from the Creos TSO network area for the control reserve products aFRR and mFRR and market them in the German reserve balancing market.

The goal is to offer market participants, hereinafter referred to as "BSP", the opportunity to market facilities with a grid connection in Luxembourg for all types of control reserves, regardless of whether the provider is a Luxembourg or German market participant.

¹ Regulation ILR/E20/8 of March 24, 2020, on the modalities of network access and participation in the market for frequency containment reserves.

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

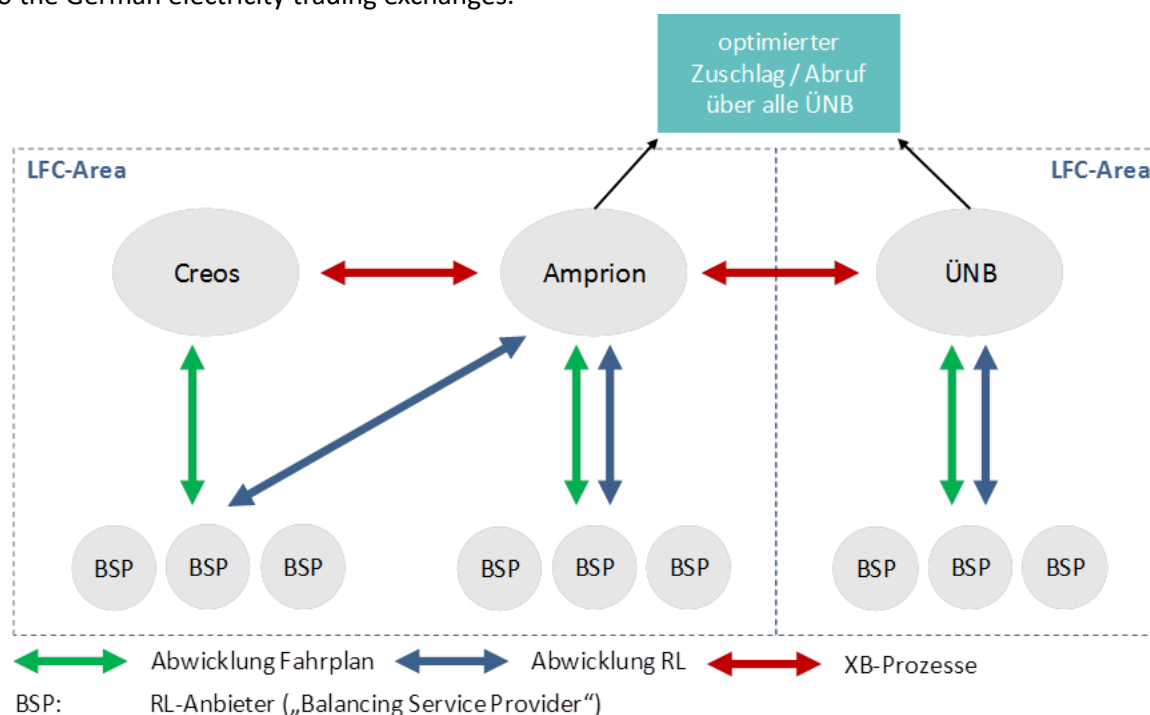
The concept provides that for BSPs wishing to market facilities for control reserves connected to the Creos grid connection area, German regulations apply. The application of German and possible additional regulations for facilities in Luxembourg is approved by the *Institut Luxembourgeois de Régulation (ILR)*.

This document does not contain binding regulations in addition to existing contracts and market rules but has an explanatory function.

Background: Market and System Structure

The concept builds on the current market and system structure. This corresponds to the regulations according to the "Load Frequency Control Block Operational Agreement" for the control block consisting of Germany, Luxembourg, and Denmark-West. The transmission grids of Creos and Amprion are operated as a common control zone (LFR- Zone FCR² or LFC-Area) but form separate scheduling areas.

Germany and Luxembourg form a common market area for the trade of schedule energy, A in. For the settlement of trade, independent scheduling areas are operated in the German and in the Luxembourgish scheduling systems. However, the Creos scheduling area does not allow direct access to the German electricity trading exchanges.



3

² Leistungs Frequenz Regelung

³ RL - Regelleistung

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

Market Access

The market access of BSPs wishing to market facilities for control reserves connected to the Creos grid connection area is governed by the following provisions in their current version:

- "*Modalités et conditions applicables au Luxembourg aux fournisseurs de services d'équilibrage pour le service de Réserve de Restauration de la Fréquence avec activation automatique (aFRR) ou manuelle (mFRR)*" in accordance with the decision of the Institut Luxembourgeois de Régulation (ILR).
- "*Modalitäten für Regelreserveanbieter*" according to the regulations of the Bundesnetzagentur (BNetzA).
- „*Präqualifikationsverfahren für Regelreserveanbieter*“ (FCR, aFRR, mFRR) in Germany ("PQ conditions") of the four German transmission system operators (see <http://www.regelleistung.net>).
- Framework agreement between Amprion and the control reserve provider.

The BSP concludes the necessary framework agreements with Amprion as the connecting TSO for each type of reserve to enable participation in the tender for the respective balancing product.

The BSP concludes a balance group framework agreement with Creos according to the current Luxembourg BRP regulations. Based on this balance group framework agreement, the provider balance group of the BSP is opened in the Creos responsible zone and identified by an EIC code. The BSP can also transfer the balance responsibility to a third party.

3. Requirements for Participation in the Balancing Market

a) Requirements for the BSP

The prerequisite for BSPs to participate in the German balancing market is qualification with the German transmission system operator (TSO) Amprion. The German modalities for participation in the balancing market (MfRRA) uniformly regulate market access from qualification to settlement for all market participants. Pooling in Luxembourg also allows small facilities (producers and consumers) to participate in the balancing market, as long as the minimum bid level is reached.

A BSP requires a framework agreement with Amprion, which takes on the role of the connecting TSO, as well as a successful PQ procedure for the respective technical units (TU) in Luxembourg.

b) Consent by Creos and the Connection Network Operator for PQ Execution

An interested BSP wishing to market facilities for balancing reserves connected to the Creos grid connection area must first contact Creos as the Luxembourg transmission system operator and the local distribution network operator (connection network operator) of the facility. Creos confirms to the interested BSP that they can register⁴ for the PQ of the reported technical units with Amprion

⁴ Confirmation declaration of the reserve-connecting network operator and the intermediate network operator(s) for reserve provision and delivery.

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

and provides them with the relevant contact points and further information on the process for the required PQ.

The declaration issued by Creos is necessary for the PQ execution.

c) Prequalification by Amprion

The PQ is carried out by Amprion according to the applicable rules of the German TSOs and is free of charge for the BSP⁵. The prequalification is based on reserve units (RU) and reserve groups (RG).

- A reserve unit refers to one or more individual facilities (technical unit) at the same grid connection point.
- A reserve group refers to one or more individual facilities with different grid connection points.

Technical units at the same grid connection point can seek PQ individually or jointly as an RU.

If multiple technical units are bundled in an RU or RG, the bundled technical units must collectively meet the PQ requirements.

It is possible to prequalify a system for several balancing products. A separate prequalification procedure must be carried out for each product in order to fulfil the specific requirements of the product. After successful prequalification, a separate framework agreement is then concluded for each balancing power product.

Prequalification is possible at any time. After all required documents, protocols, and proofs are complete, the execution of the corresponding prequalification procedure takes up to two months.

d) Signing the Necessary Agreements with Amprion

Once the prequalified marketable capacity exceeds the respective minimum bid size, Amprion concludes a framework agreement^{6,7} with the BSP, which in turn is a prerequisite for participation in the tender procedures for balancing reserves. Amprion informs Creos about the successfully completed PQ of BSPs with TUs in Luxembourg.

The BSP concludes a framework agreement with Amprion for each product (aFRR or mFRR), under which multiple pools for the same product can be combined if necessary.

e) Signing the Balance Group Agreement with Creos in Its Role as Balancing Group Coordinator (BGC)

The market rules (balance group agreement⁸) in Luxembourg must also be considered. All relevant documents are published on the Creos website. The balance group and balance group agreement required for the quantity balance/settlement of balancing energy in FRR for BSPs exclusively

⁵ Each PQ is billed by Amprion to Creos at a fixed amount.

⁶ Framework agreement on the automatic frequency restoration reserve (aFRR)

⁷ Framework agreement on the manual frequency restoration reserve (mFRR)

⁸ The valid balancing group agreement (*contrat d'équilibre*) of the scheduling area Creos between BCG and BRP.

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

marketing facilities in the Creos responsibility area are not necessary, as the balancing of the provided balancing energy and the associated downstream processes are handled by Creos in their grid area. For marketing, it is sufficient for the BSP to specify a valid EIC for identifying the pool in Luxembourg.

A BSP is required to designate a balance group (also called the provider balance group) for each pool. This balance group is identified by an EIC code and recorded in the balance group agreement. Up to 10 separate balance groups (EIC codes) can be recorded in a balance group agreement between the contracting parties Creos BGC and BSP. The signing BSP is responsible for each of these balance groups.

An appropriate EIC for identifying the balance group can be requested from a "Local Issuing Office" (e.g., LIO Creos).

The BSP is responsible for assigning each TU to a pool (i.e., balance group), which may include different types of control reserves.

f) Conditions for Creating a Pool

To achieve the required minimum supply size, the BSP can bundle several TUs within Luxembourg into one pool for each type of balancing reserve. A BSP can operate several pools for the same type of balancing reserve (e.g. marketing its own power plants and the power plants of third parties). Each TU can be prequalified for several types of balancing reserve if necessary, so that a TU can be in several pools at the same time. The same TU may not be marketed for several types of balancing reserve at the same time.

The pool composition can be changed every quarter-hour.

For FRR, a separate pool (under the same framework agreement or different framework agreements) must be set up and operated for prequalification, marketing, and delivery of balancing energy from facilities with a grid connection in Luxembourg.

The dynamic pooling of prequalified facilities between pools in the Creos and Amprion grid connection areas according to the prequalification conditions is suspended.

To differentiate between different pools of the same BSP, different EICs must be used until further notice.

g) Notification of BSP approval to affected Parties

After successful qualification and signing of the framework agreement, the BSP is also required to notify the use of a TU for control reserves to its connecting TSO, balance group coordinator (BCG), and the balance responsible party (BRP) of each technical unit before the first marketing.

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

h) Connection to the "regelleistung.net" Platform

All control reserve products and balancing energy are procured through a cross-zonal transparent and non-discriminatory tender process via the "regelleistung.net" platform. For submitting offers and accessing the results of the tenders, each BSP receives an individual secured access to the marketing platform (www.regelleistung.net), which is jointly operated by the four German TSOs.

i) BSP offer on the platform.

The bids from BSPs control reserves or balancing energy from facilities connected to the Creos TSO network area are integrated into the common Merit Order List (MOL) for the respective product and considered in the selection of bids, equivalent to bids from BSPs facilities with a grid connection in Germany.

The offer by the BSP must meet all conditions according to the modalities for control reserve providers. The BSP is responsible for the content and price. Any planned restrictions in the TU grid connections or restrictions at the grid connection point (e.g., temporary grid work) must be considered by the BSP in the offer.

j) Access to European Balancing Platforms

The European TSOs have the opportunity to exchange aFRR and mFRR balancing energy across borders through the balancing platforms⁹.

- The "Platform for the International Coordination of Automated Frequency Restoration and Stable System Operation" (PICASSO) is a platform for cross-border exchange of balancing energy from automatically activated frequency restoration reserves (aFRR).
- The "Manually Activated Reserves Initiative" (MARI) is a platform for cross-border exchange of balancing energy from manually activated frequency restoration reserves (mFRR).

The exchange of balancing energy from aFRR or mFRR between TSOs in Europe is conducted through a TSO-TSO model according to EU Regulation 2017/2195 (Guideline Electricity Balancing).

Through the German balancing energy market, BSPs automatically have access to the European balancing platforms. The bids of BSPs are equally integrated into the German MOL. All standard product bids are then forwarded to the respective European platform. There, they are merged into a Common-Merit-Order-List (CMOL) of all participating countries so that the cheapest bids can be activated by the TSOs through a common activation optimization function, taking into account any grid restrictions.

BSPs can submit bids for balancing energy to their connecting TSO and update the bid price until the closing of the balancing energy gate (25 minutes before the delivery period).

⁹ Replacement Reserves (RR) is currently not planned in the DE/LU market area

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

k) Data Exchange between Amprion and Creos

Based on § 14 ("Data Protection and Confidentiality") point 3 of the framework agreement between the BSP and Amprion, Creos receives information on the call-off of balancing energy per balancing energy provider on a quarter-hourly basis. The information on the call-off of balancing energy is limited to the call-off quantities provided by a provider from pools with facilities in the Creos grid connection area. This information serves Creos for handling processes in the monitoring area managed by Creos.

l) Securing the Pool

A BSP with a pool consisting of facilities with a grid connection in the Creos grid connection area can secure the provision and delivery through one or more pools of their own or pools of other BSPs. The securing pool(s) can be in the Creos control zone, in the Amprion control zone, or in another German control zone.

When securing from work-capacity-limited facilities (storage) through intraday trading transactions, the possibilities and restrictions for exchanging/trading scheduled energy between Germany and Luxembourg by the BSP must be considered.

m) Network failure in the TSO network - and subordinate networks of the technical units and inability to deliver

If the contractual partners¹⁰ are wholly or partially prevented from fulfilling their respective contractual obligations due to force majeure or other circumstances beyond their control or unreasonable to remedy, the contractual obligations are suspended to the corresponding extent until the cause of the disruption and its consequences are eliminated.

In the case of planned outages such as repair, maintenance, or grid expansion measures in the TSO or DSO network in Luxembourg that prevent the provider from offering services, there is no compensation for the provider. If a repair, maintenance, or grid expansion measure conducted in Germany results in the provider only being able to use their facility to a limited extent, a compensation claim arises. This statement applies equally to measures in the transmission and distribution network.

Unplanned outages in a DSO network are treated as cases of force majeure, and no compensation is due to the provider. Conversely, the provider does not face penalties for non-delivery.

If the cause of the unplanned unavailability lies with Amprion, the provider remains entitled to compensation, provided they can prove that the capacity was available and could have been called off by Amprion. This also applies to manual call-offs.

¹⁰ BSP-Amprion Framework agreement

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

In cases of maintenance, outage, alert, emergency, or restoration status of the Luxembourg power grid for safety reasons or in the event of force majeure preventing the provider from offering their services, the provider is not entitled to compensation and will not be penalized.

4. Call-off of a BSP for aFRR (Automatic Call-off)

a) Award of a BSP Bid

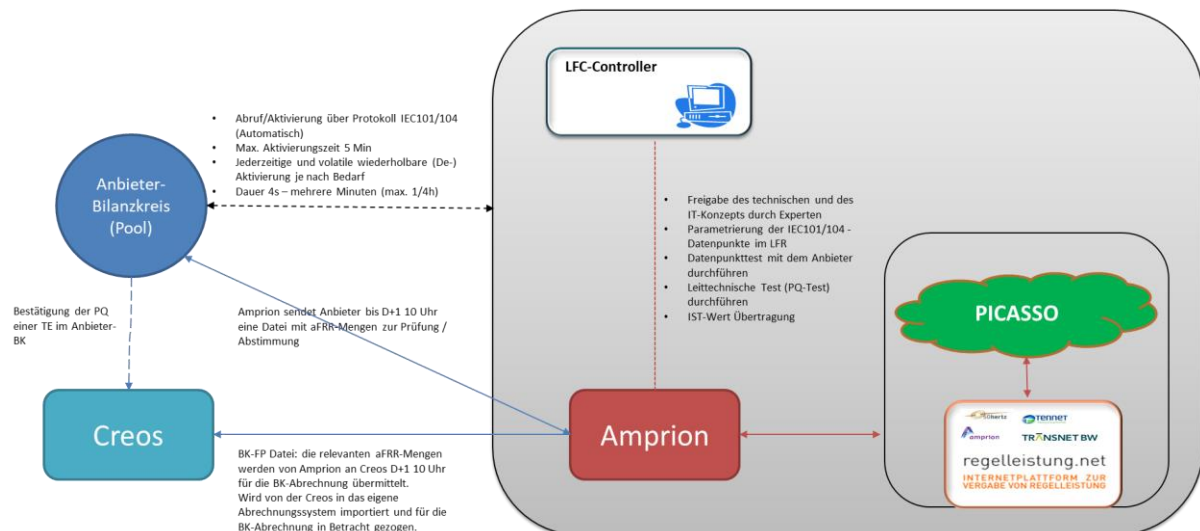
The demand for aFRR is tendered separately for positive and negative balancing power.

The tender and award of aFRR (capacity) are conducted for each calendar day in the following six product time slots: 0:00 to 4:00, 4:00 to 8:00, 8:00 to 12:00, 12:00 to 16:00, 16:00 to 20:00, and 20:00 to 24:00. The aFRR tender for the delivery day D is conducted as follows: The tender starts D-7 10:00 and ends D-1 9:00. Providers are informed about the award by D-1 at the latest 9:30.

b) Call-off by the Load-Frequency Controller

The pools of BSPs or the prequalified facilities connected to the Creos grid area are directly connected to the call-off systems of Amprion in terms of IT and control technology.

In the case of aFRR, the call-off is fundamentally a signal sent by the load-frequency controller via a predefined protocol (IEC101/104) directly to the BSP's control system. The type of connection is defined and determined in the PQ procedure by Amprion.



c) Billing of delivered capacity by Amprion

The delivered service (provision of balancing capacity and activation of balancing energy) is billed monthly by Amprion to the BSP, with billing being conducted separately for each type of control reserve. If the control reserve provider operates more than one pool for a type of control reserve, they receive a separate billing for each pool.

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

d) Impact of delivered balancing Energy on monthly balance group settlement by Creos

On the following day (by 10:00 D+1), the BSP and Creos receive all relevant quantities of the delivered balancing capacity from Amprion for verification/coordination.

For the monthly balance group settlement by the balance group coordinator Creos, the aFRR quantities (time series) provided by Amprion are assigned to the provider balance group and considered for the monthly balance group settlement. The balancing between the provider balance group and third-party balance groups is the responsibility of the BSP. This is done through a subsequent schedule correction between the provider balance group and the balance responsible party (BRP) of the balance group to which the TU is assigned. This schedule correction is the responsibility of the BSP in consultation with the BRP and is to be sent to the balance group coordinator according to the rules of the day-after process applied by Creos. If the provider balance group consists of multiple TUs of different BRPs, this schedule correction must be coordinated with each affected BRP.

5. Call-off of a BSP for mFRR (Manual Call-off)

a) Award of a BSP bid

The demand for mFRR is tendered separately for positive and negative balancing power.

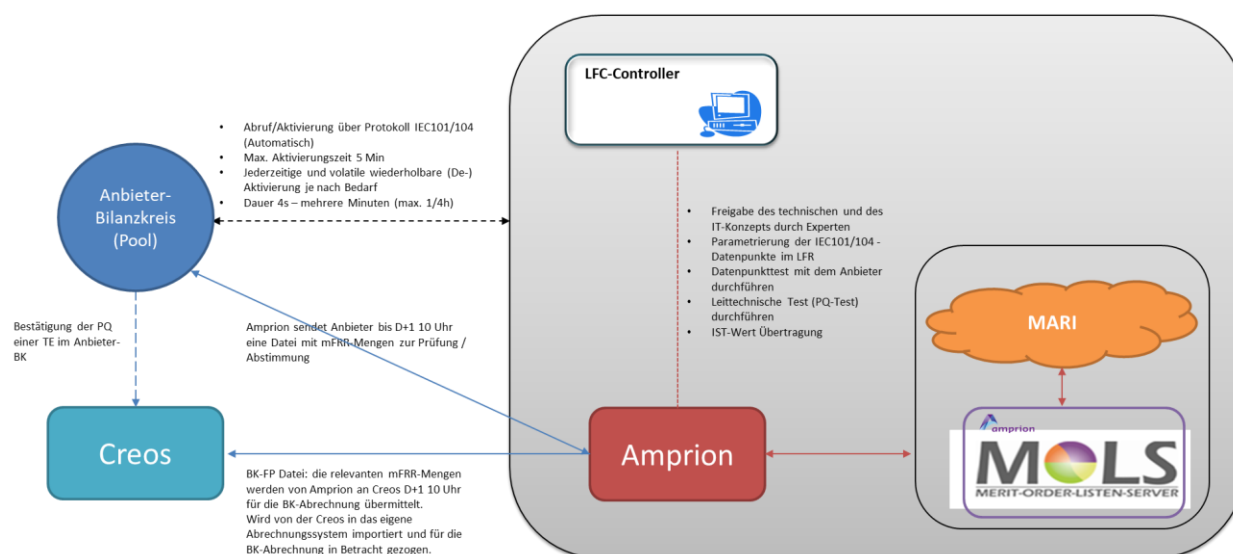
The tender and award of mFRR (capacity) are conducted for each calendar day in the following six product time slots: 0:00 to 4:00, 4:00 to 8:00, 8:00 to 12:00, 12:00 to 16:00, 16:00 to 20:00, and 20:00 to 24:00. The mFRR tender for the delivery day D is conducted as follows: The tender starts D-7 10:00 and ends D-1 10:00. Providers are informed about the award by D-1 at the latest 11:00

b) Call-off by the MOLS Server

A pool of a BSP marketing facilities connected to the Creos grid area is directly connected to the call-off systems of Amprion in terms of IT and control technology. In case of a call-off, the BSP receives an activation signal from the respective call-off system of Amprion.

Each BSP is connected to the Merit Order List Server (MOLS) through the MOLS-Provider-Client. Alternatively, the development of an appropriate interface is also possible. This interface receives the activation file from MOLS.

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.



c) Scheduling by Amprion Nominating Tool

For mFRR, the special feature is that the activation is also represented as a schedule in the schedule management.

The approach is implemented whereby the Creos grid area is treated as a separate additional scheduling area in the Germany/Luxembourg/Denmark West control block.

The following prerequisites apply:

- Amprion is responsible for an mFRR balance group (e.g., "MOLS-BK") in the Creos scheduling area
- Creos equivalently operates its own mFRR balance group in its scheduling area (e.g., "Creos-MR")
- The provider operates a provider balance group per pool (e.g., "mFRR-BK").

When a bid associated with a pool of facilities from the Creos grid area is activated, the Merit Order List Server sends an activation file to the provider and registers a corresponding schedule in the amount of the mFRR balancing energy called off between the mFRR balance group of the BSP ("mFRR-BK") and the MOLS balance group of Amprion in the Creos scheduling area ("MOLS-BK") in the scheduling management system of Creos. If multiple pools of the same or different BSPs are activated simultaneously, a corresponding schedule is transmitted by the Amprion scheduling system for each pool. This scheduling is marked by the arrow (1) in the diagram on page 13.

This scheduling is done in the scheduling system of Creos and is securely exchanged between Amprion and Creos. The BSP must also report a corresponding confirmation schedule for each transaction to the scheduling system of Creos (see point e).

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

Additionally, the Amprion scheduling system reports a summary schedule of all mFRR call-offs between the MOLS balance group managed by Amprion ("MOLS-BK") in the Creos area and the Creos-owned mFRR balance group ("Creos-MR"), summarizing all schedules according to the activations of all activated pools in the same quarter-hour (2).

d) Scheduling by Creos

Creos reports the confirmation schedule equivalent to the summary schedule from point c) between the balance groups ("MOLS-BK") and ("Creos-MR") (3). Here, it is considered that the balance group Creos-MR and the corresponding balance group from Amprion are not reconciled when delivering balancing capacity.

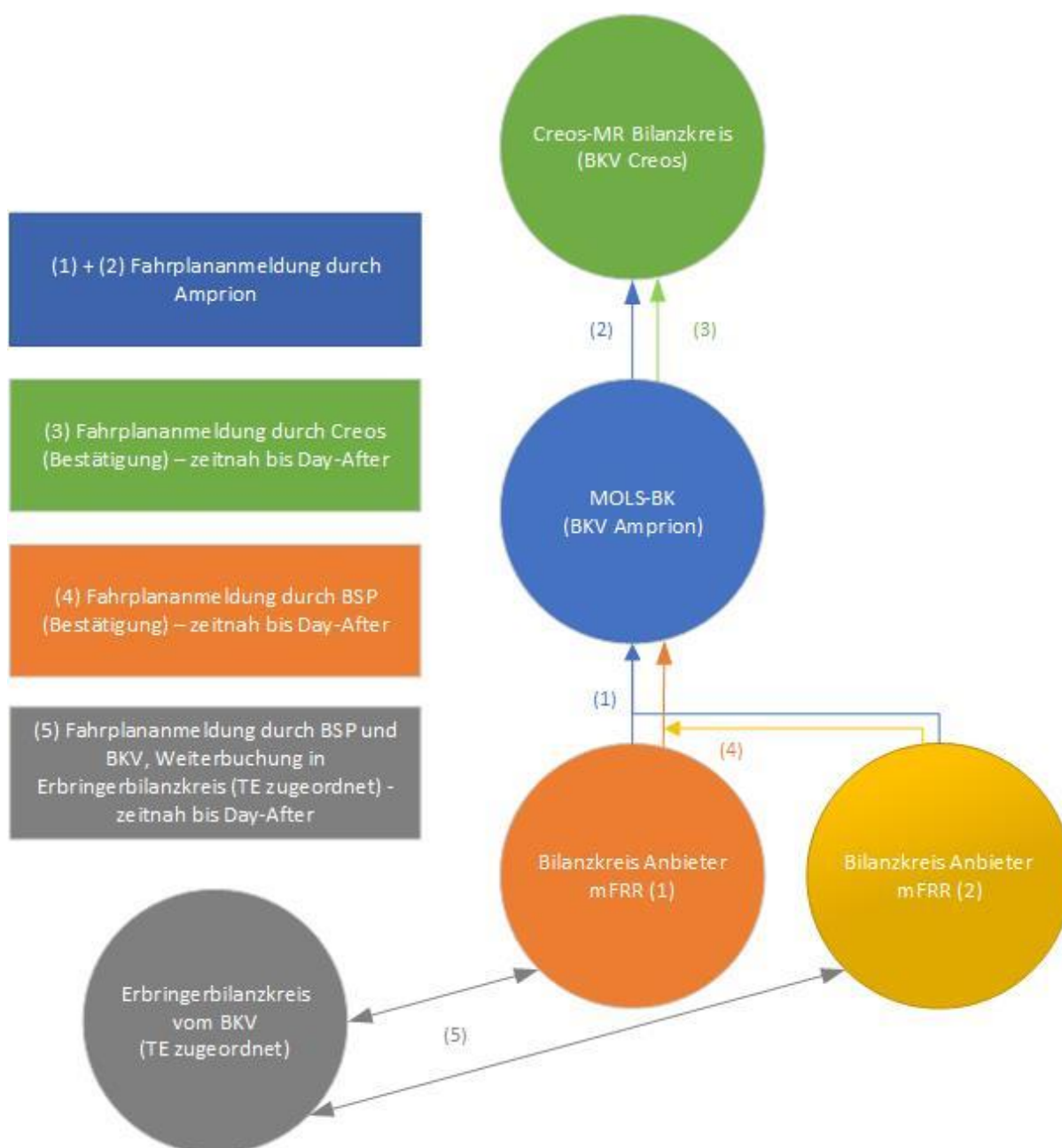
e) Scheduling by BSP

The BSP also reports a corresponding schedule between the balance groups described in point c) ("mFRR-BK"), i.e., the provider balance group(s) and the MOLS balance group managed by Amprion ("MOLS-BK"), according to the scheduling rules in Luxembourg to Creos (4).

Additionally, the BSP is responsible for the necessary subsequent bookings in the delivery balance groups to which the respective technical units are assigned. This is done similarly to the schedule correction described in point 4.d between the BSP of the provider balance group and the BRP of the individual TUs.

The responsibility lies with the BSP in consultation with the BRP and is carried out according to the valid rules of the day-after process (5).

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.



f) Billing of Delivered Capacity by Amprion

The delivered capacity (provision of balancing capacity and activation of balancing energy) is billed monthly by Amprion to the BSP.

The billings are conducted separately for each type of control reserve. If the control reserve provider operates more than one pool for a type of control reserve, they receive a separate billing for each pool.

Explanatory document on the process description for the participation of providers with facilities in Luxembourg in the German and European balancing market.

g) Impact of Delivered Balancing Energy in the Monthly Balance Group Settlement by Creos

On the following day, Amprion transmits the activated balancing energy ("actual value") per TU/pool to the BSP and Creos. Through the required schedule correction under the responsibility of the BSP and the BRP of the individual TUs, the energy flows of the affected balance groups have already been corrected and thus validated for balance group settlement by all parties.

After the end of the month, Creos, as the balance group coordinator (BGC), determines the balance group settlement of all balance groups in the area managed by Creos. The distribution network operators are obliged to transmit aggregated total time series per active balance group to the balance group coordinator for this purpose. The aggregated total time series of the provider balance groups are not created by the distribution network operator but have already been transmitted by the actual performance data from Amprion to Creos.

Amprion settles the mFRR call-off quantities between Amprion and Creos within the framework of the monthly balance group settlement so that the quantities accumulated in the "Creos-MR" balance group are balanced.