

EXECUTIVE SUMMARY FOR BALTIC LOAD FREQUENCY CONTROL BLOCK CONCEPT DOCUMENT

The load-frequency control (hereinafter referred to as “LFC”) block concept document describes the Baltic TSOs plans and proposals on the processes and rules to establish a well-functioning LFC system by the time of synchronization of Baltic power systems with Continental Europe. In order to comply with the requirements set by the Continental Europe Synchronous Area (hereinafter referred to as “CESA”) Framework Agreement, the Baltic TSOs plan to establish common Baltic LFC block with three LFC areas and have defined the main principles of the LFC, including:

- 1) LFC block structure;
- 2) LFC reserve technical requirements and prequalification;
- 3) LFC reserve capacity dimensioning and distribution methodology;
- 4) LFC reserves capacity sharing/exchange principles;
- 5) LFC reserve capacity standard products;
- 6) LFC reserve energy standard products;
- 7) LFC reserve capacity procurement process;
- 8) LFC reserve activation process.

In chapter 2, the Baltic TSOs describe the general principles of LFC that are applied in Synchronous Area Continental Europe, refer to the regulations that apply for the LFC and describe the overall balancing process.

The responsibilities of the LFC blocks, LFC areas and TSOs are described in chapter 3. Furthermore, the Baltic TSOs propose to establish a common Baltic LFC block with three LFC areas and describe how roles are distributed in the Baltic LFC block.

To monitor the overall frequency restoration capabilities, the CESA includes frequency restoration control error quality target levels for each LFC block of CESA. The overall calculation method is referred to in the chapter 4 with the estimated quality targets for Baltic LFC block. In addition, the Baltic LFC block, TSOs shall share these quality targets and cooperate to minimise the frequency restoration control error.

Technical characteristics, prequalification process and dimensioning rules of frequency containment reserve (hereinafter referred to as “FCR”) are described in chapter 5. FCR has the purpose to contain the system frequency in the synchronous area during any fluctuations of active power balance in the system. As the effect of the frequency deviation can affect the whole synchronous area, CESA has distributed the FCR requirement between all TSOs of the synchronous area. FCR service has to fully activate in 30 seconds if the local frequency deviation is at least ± 200 mHz. CESA has developed common rule how to dimension the FCR for each TSO. The estimated FCR capacity volumes for each LFC area are as follows:

	LFC area EE	LFC area LV	LFC area LT
FCR upward and downward, MW	8	8	9

Technical characteristics, prequalification process and dimensioning rules for frequency restoration reserve (hereinafter referred to as “FRR”) are described in chapter 6, FRR includes both automatically and manually activated FRR (aFRR and mFRR). The purpose of FRR is to free already activated FCR and minimise system imbalance close to zero. Concept document describes the characteristics of aFRR and mFRR products that are based on ACER approved implementation frameworks for aFRR and mFRR balancing energy platforms. Reserve unit providing aFRR has to be capable to receive automatic signals from TSOs and activate full aFRR capacity within 5 minutes. mFRR providing reserve units are activated by direct or scheduled activation and have to be capable of providing full capacity within 12,5 minutes.

FRR is dimensioned for LFC block level and operated on LFC area level. Baltic TSOs describe the dimensioning rules for FRR, aFRR and mFRR and distribute the dimensioned capacities between TSOs.

As a result of the dimensioning and distribution rules, the estimated balancing capacities of aFRR and mFRR for TSOs of the Baltic LFC block are as follows:

Reserve type	LFC area EE	LFC area LV	LFC area LT	Baltic LFC block
aFRR upward, MW	40	30	60	130
aFRR downward, MW	40	30	60	130
mFRR upward, MW	210	145	225	580
mFRR downward, MW	257	37	276	570
FRR upward, MW	250	175	285	710
FRR downward, MW	297	67	336	700

Baltic balancing energy market framework and further development are described in chapter 7. Baltic TSOs propose further actions to establish aFRR balancing energy market, ensure imbalance netting and join European aFRR balancing energy exchange platform PICASSO as well as implementation and joining the European mFRR balancing energy exchange platform MARI.

Baltic TSOs propose to establish a common balancing capacity market for LFC reserves to ensure that FCR and FRR reserves are procured in market-based mechanisms in most optimal way. The principles for the Baltic balancing capacity market are described in the chapter 8. The capacities will be procured from the market and FRR reserves procured for the Baltic LFC block will be shared and exchanged among Baltic TSOs. To ensure that FRR balancing capacity can be exchanged or shared between LFC areas, the Baltic TSOs propose to allocate cross-zonal capacity in a way that maximises the economic surplus and describe possible approach of cross-zonal capacity allocation. The Baltic TSOs describe the LFC reserve capacity products and overall procurement process. Baltic TSOs foresee that additional common study shall be made to analyse additional requirements for Baltic LFC reserve market to ensure security of supply of Baltic power systems. Baltic TSOs also make a proposal how to use the TSO resources for the balancing capacity.

LFC concept document also provides the roadmap of common Baltic TSOs projects intended to establish the Baltic LFC block and balancing markets. Main projects with milestones are shown in the following figure:

PROJECTS	PLAN START	PLAN END							
			2020	2021	2022	2023	2024	2025	2026
MARI platform implementation	2020	2023							
PICASSO platform implementation	2020	2024							
Baltic LFC block operational agreement establishment	2020	2024							
Baltic LFC block common prequalification requirements for Reserve Units	2021	2022							
LFC Reserve Unit prequalification*	2022	-							
15 minutes ISP implementation**	2020	2024							
Baltic common balancing capacity markets implementation (FCR, aFRR, mFRR)	2021	2025							

* - By the end of 2023 Baltic TSOs will verify the capacities that have been prequalified to see if the dimensioned capacities can be covered. If not enough reserves are available Baltic TSOs need to take measures to ensure that enough reserve will be available to synchronize with CESA.

** - 15 minutes ISP implementation is not described in LFC concept document.