
Explanatory note for the determination of LFC blocks proposal for synchronous area Continental Europe

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Explanatory note

The operation of Load-Frequency Control (LFC) processes is based on operational areas, where every area has their individual responsibilities with respect to the LFC structure. The superior structure is the synchronous area in which frequency is the same for the whole area. The synchronous area Continental Europe (CE) consists of several LFC Blocks, each LFC Block consists of one or more LFC Areas. An LFC Area itself consists of one or more Monitoring areas.

The above described hierarchy is illustrated in Figure 1. Each of these operational areas has their own obligations. A Monitoring Area has the obligation to calculate and measure the active power interchange in real-time in that area. A LFC Area has the additional obligation to fulfil the frequency restoration quality target parameters by using the frequency restoration process. A LFC Block is in addition responsible for the dimensioning of frequency restoration reserve (FRR) and replacement reserves (RR). The Synchronous Area has the obligation to fulfil the frequency quality target parameters by using the frequency containment process.

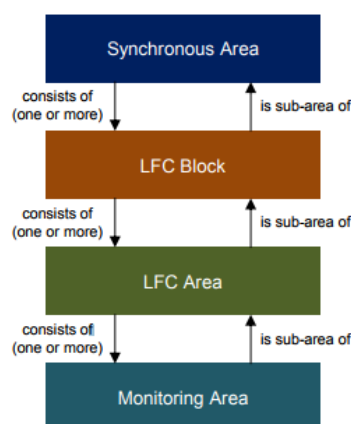


Figure 1. Types and hierarchy of areas operated by TSOs

According to the Article 141(2) of Commission Regulation (EU) 2017/1485 establishing a guideline on electricity transmission system operation (hereafter referred to as “SO GL”), by 4 months after entry into force of this Regulation, all TSOs of a synchronous area shall jointly develop a common proposal regarding the determination of LFC blocks, which shall comply with the following requirements:

- a monitoring area corresponds to or is part of only one LFC area;
- a LFC area corresponds to or is part of only one LFC block;
- a LFC block corresponds to or is part of only one synchronous area; and
- each network element is part of only one monitoring area, only one LFC area and only one LFC block.

This proposal covers all the previous requirements, taking into account the load-frequency control structure in accordance with Article 139 of SO GL.

Finally, and according to the Article 6(3)(g), this proposal shall be subject to approval by all regulatory authorities of the Synchronous Area Continental Europe.

ANNEX 1. LFC blocks, LFC areas and monitoring area of non-EU countries

Due to the existing interdependencies and cooperation between EU and non-EU countries regarding the Load Frequency Control, the list presented below shows the LFC block, LFC areas and monitoring areas in Continental Europe for non EU countries.

The scope of cooperation with third country TSOs, until concluding the agreement in accordance with Article 13 of SO GL (as set in article 1.2 of LFC blocks determination), are determined by the individual agreements between the respective TSOs of LFC block and/or with Continental Europe. These individual agreements have to comply with the EU Legislation, due to the fact that EU TSOs are the ultimate responsables for this.

Country	TSO (full company name)	TSO (short name)	Monitoring Area	LFC AREA	LFC Block
Albania	Operatori sistemit transmetimit	OST	OST	OST	OST
Bosnia and Herzegovina	Nezavisni operator sustava u Bosni i Hercegovini	NOS BiH	NOS	NOS	SHB
Montenegro	Crnogorski elektroprenosni sistem AD	Crnogorski elektroprenosni sistem	CGES	CGES	SMM
FYR of Macedonia	Macedonian Transmission System Operator AD	MEPSO	MEPSO	MEPSO	SMM
Ukraine	National Power Company "Ukrenergo"	Ukrenergo	Burstyn PP Island	Burstyn PP Island	PSE + Burstyn PP Island (Polish Control Block)
Serbia	Joint Stock Company Elektromreža Srbije	EMS	EMS	EMS	SMM
Switzerland	Swissgrid AG	Swissgrid	SG	SG	SG
Turkey	TEIAS	TEIAS	TEIAS	TEIAS	TEIAS

- SMM: Control Block Serbia, Macedonia, Montenegro
- SHB: Control Block Slovenia, Croatia and Bosnia/Herzegovina

Table 1. List of Monitoring Areas, LFC Areas and LFC Blocks of non-EU countries.

ANNEX 2. LFC blocks, LFC areas and monitoring area interconnectors in Continental Europe.

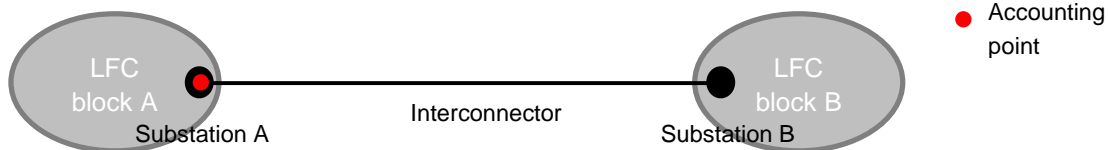
Each monitoring area, LFC area or LFC block is delimited by the points of measurement, in such a way that each network element inside is part of only one of them.

However, interconnectors between two monitoring areas, LFC areas or LFC blocks represent an special elements that could be misinterpreted as a one network element belonging to two diferent monitoring areas, LFC areas or LFC blocks. In order to avoid this confusion, an interconnector between two monitoring areas, LFC areas or LFC blocks shall be considered as two network elements:

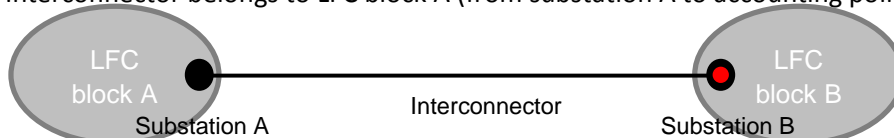
- Network element A: From substation A to Accounting Point* – interconnector belongs to area/block A
- Network element B: From substation B to Accounting Point* – interconnector belongs to area/block B

*Accounting Point is defined as the agreed energy delivery point between two TSOs. The accounting value may be equal to a physical metered data or calculated by using meters on both sides, and is used for the calculation and accounting of unintentional deviations and grid losses.

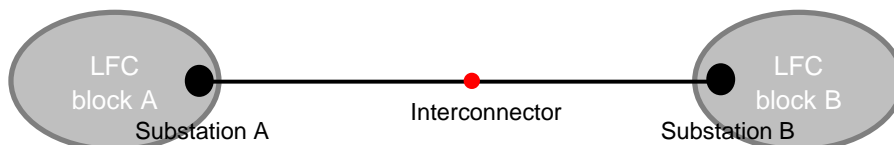
Case 1: Interconnector belongs to LFC block B (from substation B to accounting point)



Case 2: Interconnector belongs to LFC block A (from substation A to accounting point)



Case 3: Interconnector belongs to LFC block A (from substation A to accounting point) and to LFC block B (from substation B to accounting point)



Nevertheless, each TSO performs the load-frequency control in real time by using the measurement values from one side of the interconnector in a coordinated way. The other side of the interconnector is used for redundancy reasons. For this the TSOs deliver redundant measurement values for their tie-lines to the TSOs responsible for the respective ACE calculation of the monitoring areas, LFC areas and LFC blocks.