Balancing Report in Accordance with Article 60(1) of Commission Regulation (EU) 2017/2195 of November 2017 establishing a guideline on electricity balancing

June 22, 2020

Content

Legal framework

Article 60(1) of the Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing, hereafter referred to as “EBGL” requires that at least once every two years, each TSO shall publish a report on balancing covering the previous two calendar years, respecting the confidentiality of information in accordance with Article 11.

This report is established by Elia Transmission Belgium SA (legal successor of Elia System Operation SA, both referred hereafter as “ELIA”) to comply with this legal requirement and covers the years 2018 and 2019. Article 60(2) of the EBGL specifies the content of the report, which determines the structure of this report:

a	information concerning the volumes of available, procured and used specific products, as well as justification of specific products subject to conditions pursuant to Article 26;
b	the summary analysis of the dimensioning of reserve capacity including the justification and explanation for the calculated reserve capacity requirements;
c	the summary analysis of the optimal provision of reserve capacity including the justification of the volume of balancing capacity;
d	an analysis of the costs and benefits, and the possible inefficiencies and distortions of having specific products in terms of competition and market fragmentation, participation of demand response and renewable energy sources, integration of balancing markets and side-effects on other electricity markets;
e	an analysis of the opportunities for the exchange of balancing capacity and sharing of reserves;
f	an explanation and a justification for the procurement of balancing capacity without the exchange of balancing capacity or sharing of reserves;
g	an analysis of the efficiency of the activation optimisation functions for the balancing energy from frequency restoration reserves and, if applicable, for the balancing energy from replacement reserves.

Note that this report is complementary to the report published by ENTSO-E following article 59 of the EBGL, in which ENTSO-E focusses on monitoring, describing and analyzing the implementation of the EBGL, as well as reporting on the progress made concerning the integration of balancing markets in Europe.

Report pursuant to article 60 of the EBGL

a) information concerning the volumes of available, procured and used specific products, as well as justification of specific products subject to conditions pursuant to Article 26;

Pursuant to Article 26 of the EBGL, following the approval of the implementation frameworks for the European platforms pursuant to Articles 19, 20 and 21 of the EBGL, each TSO may develop a proposal for defining and using specific products for balancing energy and balancing capacity:

- As the Implementation Frameworks for the European platforms pursuant to Articles 20 and 21 were approved on 24 January 2020 by the Agency for the Cooperation of Energy Regulators, pursuant to Article 6(10)(b) of Regulation (EU) 2019/942 and Article 5(7) of the EBGL, this section is not relevant for the years 2018 and 2019.

- The Implementation Framework for the European platform pursuant to Article 19 is not applicable to ELIA.

b) the summary analysis of the dimensioning of reserve capacity including the justification and explanation for the calculated reserve capacity requirements;

Reserve capacity requirements	**2018**		**2019**	
	positive	negative	positive	negative
FCR (symmetric)	81 MW		80 MW	
FRR	1190 MW	N.A.	1039 MW	< 1026 MW
aFRR (symmetric)	139 MW		145 MW	
mFRR	1051 MW	N.A.	894 MW	< 881 MW

For 2018, the dimensioning methodology for the reserve capacity needs was specified in ELIA's proposal "Dossier Volume 2018" which was approved by CREG with Decision (B)1631 of 6 July 2017[1].

[1] https://www.creg.be/nl/publicaties/beslissing-b1631

- In compliancy with Article 233 of the former Belgian Federal Technical Regulation[2], ELIA submitted to the CREG on yearly basis a methodology and the corresponding results for sizing the reserve capacity on aFRR and mFRR.

    - The **FCR needs** are determined by ENTSO-E at 81 MW according to Policy 1 of the ENTSO-E Operational Handbook.

    - **Total positive (upward) FRR needs** are determined at 1190 MW, based on the capacity to cover:

        - the dimensioning incident determined at 1143 MW by the projected offshore generation fleet in 2018 (note that ELIA conducted a study in 2018 justifying to exclude offshore storm events as a dimensioning incident);

        - the probability to face reserve deficits, determined by the expected LFC block imbalances in 2018. The latter is based on a statistical analysis of historical data on LFC block imbalances, taking into account prediction errors of renewable generation and forced outages of power plants. With a predefined reliability level of 99.9%, the required reserve capacity was determined at 1190 MW.

    - The **aFRR needs** are determined symmetrically (positive and negative) at 139 MW based on a statistical analysis of historical data on LFC block imbalances and prediction errors of renewable generation.
    - The **positive mFRR needs** are thereafter determined as the difference between the FRR and the aFRR needs, i.e. 1051 MW. Besides the aFRR needs, no additional negative mFRR needs are taken into account.

For 2019, the dimensioning methodology for the reserve capacity needs was specified in ELIA's LFC block Operational Agreement, hereafter referred to as LFCBOA. This proposal was approved by CREG with Decision (B)1912/2 of 27 May 2019[3] :

- Annex 1 of the SAFA[4] which is the Policy on Load-Frequency Control and Reserves, determines amongst others the dimensioning rules for FCR.

- **Positive FRR needs** are determined on yearly basis as the required reserve capacity on FRR, as well as the ratio on aFRR and mFRR required covering the expected LFC block imbalances following forecast error risks and forced outage risks, within the ELIA LFC block. The dimensioning rules for the positive FRR needs are based on the principles described in Article 157 of the Commission Regulation (EU) 2017/1485 of 2 August

[2] Note that a new version of the Federal Grid Code entered into force where Article 228 specifies the requirements for the dimensioning of reserve capacity and determination of balancing capacity.
[3] https://www.creg.be/sites/default/files/assets/Publications/Decisions/B1912-2NL.pdf
[4] https://transparency.entsoe.eu/system-operations-domain/operational-agreements-of-synchronous-areas/show

2017 establishing a guideline on electricity transmission system operation (hereafter referred to as "SOGL"). ELIA (being the sole TSO in its LFC block) is required to have sufficient reserve capacity on FRR at any time in accordance with the dimensioning rules. The dimensioning rules for the FRR also determine the maximum sharing capacity which can be accounted in the dimensioning:

- ELIA determines the positive FRR needs for the next year following the calculation based on a **probabilistic methodology**. This method ensures that the positive reserve capacity on FRR is sufficient to cover the expected positive LFC block imbalances (production shortages) for at least 99.0% of the time.

- In addition, ELIA ensures that the positive FRR needs are not less than the positive dimensioning incident of the LFC block. The dimensioning incident is defined by Article 3 of the SOGL as the highest expected instantaneously occurring active power imbalance within a LFC block in both positive and negative direction.

- ELIA uses a probabilistic method to determine the **aFRR needs symmetrically (positive and negative)**, establishing a time series of one year of expected variations between quarter-hours of LFC block imbalances. This is based on the same time series of expected LFC block imbalances used for calculating positive FRR needs. The aFRR capacity is determined as the capacity that can cover 79% of the absolute variations of imbalances.

- **Negative FRR needs** are determined on daily basis and are based on the same principles as for the positive FRR reserve capacity needs. The main difference is that the calculation is conducted on a daily basis taking into account the predicted direction of the HVDC interconnector with Great-Britain. **The negative mFRR needs** are then determined as the difference between the FRR needs and the aFRR needs.

Note that a new version of the ELIA LFC block Operational Agreement[5] was approved by CREG on 6 December 2019 to implement a full dynamic dimensioning methodology as from 3 February 2020. This methodology is described in detail in the LFCBOA and corresponding explanatory note, and will be described in the next version of this report.

[5] https://www.elia.be/en/electricity-market-and-system/system-services/keeping-the-balance

c) the summary analysis of the optimal provision of reserve capacity including the justification of the volume of balancing capacity;

Balancing capacity	**2018**	**2019**
FCR	81 MW	80 MW
aFRR (symmetric)	139 MW	145 MW
Positive mFRR	830 MW with a minimum of 300 MW of mFRR standard	844 MW with a minimum of 314 MW of mFRR standard

For 2018, the dimensioning methodology for the required balancing capacity was specified in ELIA's proposal "Dossier Volume 2018" in which the reserve capacity and balancing capacity requirements are determined.

- For FCR, the balancing capacity equals the required FCR needs.
- For aFRR, considering the high service availability of the aFRR balancing capacity products, the balancing capacity is determined to be equal to the required aFRR needs.
- For mFRR, considering the service availability of the mFRR balancing capacity products, and taking into account inter-TSO contracts with neighbouring TSOs, the balancing capacity, i.e. 830 MW, is determined lower than the required mFRR capacity. This balancing capacity is covered with a minimum of 300 MW of "mFRR standard". The rest of the capacity can be covered by "mFRR flex" and "mFRR standard" products where mFRR flex product is characterized by additional activation rules.

For 2019, the dimensioning methodology for the required balancing capacity was specified in ELIA's proposal "Dossier Volume 2019" approved by CREG with Decision (B)1808 of 18 October 2018 in which the reserve capacity and balancing capacity requirements are determined.

- For FCR, the balancing capacity equals the required FCR needs.
- For aFRR, taking into account the guaranteed availability of the aFRR balancing capacity product, the balancing capacity is determined to be equal to the required aFRR needs. This capacity is determined in line with Article 32 of the EBGL, taking into account that :
    - Elia did not have sharing agreements on aFRR with other TSOs.
    - As non-contracted balancing energy bids have a limited availability, no capacity can be guaranteed with acceptable availability on an annual basis. For this reason, ELIA cannot cover, even partially, its aFRR needs with non-contracted balancing energy offers.

- For positive mFRR, taking into account the guaranteed availability of the mFRR balancing capacity products in combination with the sharing of reserves with other TSOs, balancing capacity is determined at 844 MW. This balancing capacity is covered with a minimum of 314 MW of "mFRR standard". The rest of the capacity can be covered with “mFRR flex” and “mFRR standard” products.

    - As shared mFRR reserve capacity with neighboring TSOs can only be activated in exceptional circumstances, taking into account service availability and remaining cross-border capacity, ELIA can take into account 50 MW of FRR sharing to cover mFRR requirements.

    - As non-contracted balancing energy bids have a limited availability, no capacity can be guaranteed with acceptable availability on an annual basis. For this reason, ELIA cannot cover, even partially, its mFRR needs with non-contracted balancing energy offers.

- The negative mFRR requirements are covered with non-contracted balancing energy bids and mFRR reserve sharing. On the basis of an analysis of the availability of non-contracted balancing energy bids and the availability of mFRR sharing (based on the availability of the service and the available cross-border capacity on continental borders) no need to procure balancing capacity could be demonstrated. The coverage of the needs with available means is subject to a yearly analysis.

The table below depicts the balancing capacity mFRR standard and mFRR flex procured per month in 2018-19, procured by Elia.

	2019			2018		
	mFRR standard	mFRR flex	total	mFRR standard	mFRR flex	total
January	490	354	844	392	438	830
February	405	439	844	425	405	830
March	460	384	844	454	376	830
April	468	376	844	438	392	830
May	442	402	844	336	494	830
June	402	442	844	465	365	830
July	366	478	844	554	276	830
August	378	466	844	570	260	830
September	409	435	844	410	420	830
October	460	384	844	422	408	830
November	408	436	844	465	370	835
December	424	420	844	464	366	830

d) Analysis of the costs and benefits, and the possible inefficiencies and distortions of having specific products in terms of competition and market fragmentation, participation of demand response and renewable energy

sources, integration of balancing markets and side-effects on other electricity;

In absence of specific products for balancing energy and balancing capacity in 2018 and 2019, as explained in section a, this section is currently not applicable for ELIA's LFC block.

e) Analysis of the opportunities for the exchange of balancing capacity and sharing of reserves;

As the dimensioning methodology for 2018 was proposed in 2017, before the entry into force of the SOGL and the EBGL, neither sharing of reserves nor exchange of balancing capacity where considered as such. Nevertheless,

- ELIA already disposed of inter-TSO contracts which were to be used in exceptional conditions to provide capacity (if available). Part of this capacity was taken into account in the dimensioning of FRR reserve capacity.

- ELIA already procured part of its FCR balancing capacity abroad by means of the FCR Cooperation.

As from 2019, after the entry into force of the SOGL and the EBGL, ELIA applied the sharing of reserve concept for mFRR and the exchange of balancing capacity concept of FCR (based on the FCR Cooperation). Opportunities for the sharing of FCR and aFRR, as well as the exchange of aFRR balancing capacity and mFRR balancing capacity is discussed in Section f.

- **Exchange of FCR balancing capacity**

ELIA joined the FCR Cooperation in 2016. FCR Cooperation has developed a common process for the procurement of FCR with other TSOs, thus increasing the competition between BSPs and reducing the overall cost of procurement. ELIA procures since then a significant part of its FCR needs abroad.

The table below represents the awarded volume of FCR of Belgian BSPs on the FCR Cooperation as well as the total capacity procured on the FCR Cooperation. Note that total capacity procured on the FCR Cooperation includes the awarded FCR of Belgian BSPs. Note that part of the FCR capacity is procured by means of a local auction, and this before the procurement on the FCR Cooperation has been concluded. By means of this auction, Elia ensures that at least 30 % of their total combined initial FCR obligations is physically provided inside their LFC block, in line with Article 163 and Annex VI of the SOGL. Specific information on the prices and volumes of the FCR cooperation can be found on the website of the FCR Cooperation[6].

[6] https://www.regelleistung.net/apps/datacenter/tenders/?productTypes=PRL&from=2019-07-01&to=2020-04-30&tid=PRL_20200522_D1

	2019		2018	
	Awarded volume FCR of Belgian BSPs	Volumes for Belgium	Awarded volume FCR of Belgian BSPs	Volumes for Belgium
January	0.23	48.03	0.00	38.39
February	0.25	48.36	0.00	51.00
March	0.68	49.00	0.22	53.13
April	0.54	49.93	9.33	54.27
May	6.02	51.55	2.71	41.10
June	0.00	47.77	0.00	52.37
July	0.87	47.81	7.45	54.13
August	0.49	46.23	0.00	37.26
September	1.00	42.23	0.23	47.60
October	0.58	39.30	0.00	47.00
November	7.93	51.50	0.00	48.57
December	4.00	53.58	4.29	49.58

- **Sharing of mFRR**

In line with Article 32(1) of the EBGL, ELIA takes into account the sharing of reserve capacity with neighbouring TSOs in the dimensioning of its balancing capacity.

The maximum shared volume for positive and negative reserve on mFRR that can be taken into account is specified in the LFCBOA, in accordance with Article 157(2)(j) and Article 157(2)(k) of the SOGL. A TSO in the Continental Europe area may reduce the positive (or negative) reserve capacity on FRR if limited to the difference, if positive, between the size of the positive dimensioning incident and the reserve capacity on FRR required to cover the positive (or negative) LFC block imbalances during 99 % of the time. The reduction of the positive reserve capacity shall not exceed 30 % of the size of the positive dimensioning incident.

As explained in LFCBOA, ELIA had at disposal in 2018 and 2019 reserve sharing agreements on mFRR with neighbouring TSOs. It is however to be stressed that these contracts are voluntary, and can be subject to modifications on request of the counter-party. Pursuant to Article 157(2)(g) of the SOGL, and Article 10(3) of the LFCBOA, ELIA takes into account the restrictions defined in the mFRR sharing agreements due to possible violations of operational security and the mFRR availability requirements as specified in Article 157(2)b:

- these reserves are subject to service availability and may only be activated under exceptional conditions described in the operational agreements governing the sharing of the mFRR reserve to maintain the balance in the LFC block for a limited number of hours and thus cover part of the mFRR needs. They are generally activated after using all the other available balancing services (the non-contracted balancing energy bids and the contracted balancing capacity);

- these reserves are never guaranteed as the availability of cross-border capacity is not ensured and are therefore subject to the availability of interconnection capacity at borders, as well as internal network operating constraints such as congestions.

Taking into account the above-mentioned constraints, and following a reduction in the reliability rate for covering the expected LFC block imbalances (as specified in Article 8 of the LFCBOA, from 99.9% (in 2018) to 99.0% (in 2019), ELIA determines as an act of prudence and in order to limit the planned activations in accordance with the contracts:

- the positive sharing capacity included in the dimensioning to 50 MW;
- the negative sharing capacity included in the dimensioning to 350 MW.

f) an explanation and a justification for the procurement of balancing capacity without the exchange of balancing capacity or sharing of reserves;

Where the previous section already discusses the opportunities of exchange of balancing capacity for FCR, and sharing of mFRR, this section focuses on the exchange of balancing capacity and sharing of reserve which is currently not implemented.

- As FCR is dimensioned on regional basis by ENTSO-E, i.e. for Continental Europe, the sharing of FCR reserve capacity for ELIA's LFC block is not applicable.

- Considering the automatic, local character of the activation of aFRR, it has been considered very complex to share aFRR reserve capacity or exchange aFRR balancing capacity before the European balancing platform for aFRR is established. In addition, the existing gaps between the local market designs would likely hinder such exchange.

- In ELIA's view, the exchange of mFRR balancing capacity would have required the reservation of cross-zonal capacity for this purpose. This was not expected to be beneficial to the market, as it would have reduced trading opportunities in day-ahead and intraday. It would also have required to establish with neighbouring TSOs complex processes to be able to activate the reserve contracted abroad frequently.

g) Analysis of the efficiency of the activation optimisation functions for the balancing energy from frequency restoration reserves and, if applicable, for the balancing energy from replacement reserves.

As the implementation of the balancing energy exchange platforms according to Articles 20 and 21 of the EBGL were not implemented in 2018 and 2019, this chapter is not yet relevant for ELIA's LFC block.