

# Detailed Data Descriptions of SO GL transparency requirements

Final draft 2.0 | 3 May 2021

From: System Operations Committee

---

## CONTENTS

<b><u>Information on operational agreements</u></b>	<b>7</b>
<b><u>Information on frequency quality</u></b>	<b>9</b>
<u>Frequency quality parameters</u>	9
<u>FRCE target parameters</u>	10
<u>Methodology for determining the risk of exhaustion of FCR</u>	11
<u>Results of the criteria application process</u>	12
<u>Ramping period</u>	15
<b><u>Information on load-frequency control structure</u></b>	<b>16</b>
<u>Process activation and responsibility structure</u>	16
<u>Imbalance netting process</u>	17
<b><u>Information on FCR</u></b>	<b>18</b>
<u>Dimensioning approach for FCR</u>	18
<u>FCR amount and shares</u>	19
<u>FCR properties</u>	21
<b><u>Information on FRR</u></b>	<b>22</b>
<u>FRR requirements</u>	22
<u>FRR dimensioning rules</u>	23
<u>Outlook of the reserve capacities on FRR</u>	24
<u>Actual reserve capacities on FRR</u>	26
<b><u>Information on RR</u></b>	<b>28</b>
<u>RR requirements</u>	28
<u>Outlook of the reserve capacities on RR</u>	29
<u>Actual reserve capacities on RR</u>	31
<b><u>Information on sharing and exchange</u></b>	<b>33</b>
<u>Sharing of FRR and RR in the same Synchronous Area</u>	33
<u>Sharing of FCR between Synchronous Areas</u>	35
<u>Exchange of reserves (within SA or between SAs)</u>	37
<b><u>Appendix – Values for frequency quality evaluation criteria</u></b>	<b>39</b>

## Revision history

Version	Release	Date	Description
1	0	2019-01-22	First version. Approved by SOC on 22/1/2019.
2	0	2020-12-01	<p>Description of publications under art. 185.4 significantly simplified and shortened, without altering the substance of the published data.</p> <p>Publication under art. 187.2 revised, publication of contracted capacity removed.</p> <p>Publication under art. 188.3 rewritten so that the outlook of FRR capacity distinguished between required and available capacity.</p> <p>Publications under art. 190.1 and 190.2 completely rewritten to reflect that capacity is shared among two or more TSOs, rather than “transferred” from a connecting to an acquiring TSO.</p> <p>Publication under art. 190.3 completely rewritten. Actual exchanges rather than agreements will be published. Actual exchanges will be published in a "Net position" manner, indicating reserve capacity “surplus or deficit”, instead of acquiring/connecting domains which in multilateral scenarios may not even be possible to specify. Relation to data published under EB GL art. 12 clarified. TSOs only will submit data directly to transparency platform.</p> <p>Full editorial overhaul. Content of DDD aligned with style and conventions established by the MoP for the Transparency Regulation and EB GL.</p>
2	0	2021-01-12	Publication under art. 188.3: the outlook of FRR capacity includes only required capacity.
2	0	2021-01-29	<p>Article 187.2 revised, publication of contracted capacity removed.</p> <p>Article 188.1 StG OF confirmed that FRR requirements are published in Operational Agreements.</p> <p>Article 188.4. StG Operations to define further if needed how voluntary bids are handled.</p> <p>Article 189.1. StG OF confirmed that, where applicable, RR requirements are published in Operational Agreements.</p> <p>Articles 190.1 and 190.2 completely rewritten to reflect that capacity is shared among two or more TSOs, rather than “transferred” from a connecting to an acquiring TSO.</p>

Version	Release	Date	Description
			<p>Article 190.3 completely rewritten. Actual exchanges rather than agreements will be published. Actual exchanges will be published in a "Net position" manner, indicating reserve capacity surplus or deficit, instead of acquiring/connecting domains which in multilateral scenarios may not even be possible to specify. Relation to data published under EB GL art. 12.3.h clarified. TSOs only will submit data directly to Transparency Platform. Comments are shown in the DDD.</p> <p>Removed reference to entering into force and consultation requirements of Article 183.</p> <p>Wording in several references for SO GL Article 184.2&amp;3 referring to the SAOA already published in TP.</p> <p>Article 188.3 Only explicitly required (instead of procured) reserves should be reported.</p> <p>Article 188.4 Clarified it is reserve capacity instead of balancing capacity</p> <p>Remove paragraph in comments Art 188.4, reference to EB GL 12(3) was misleading.</p> <p>SO GL article 189.2 Only explicitly required reserves should be reported (instead of procured).</p>
2	0	2021-05-03	<p>Editorial corrections.</p> <p>Under article 189.3, also maximum capacity shall be published, for consistency with 188.4.</p> <p>Under article 190.3, actual exchanges may be published per LFC block or LFC area.</p> <p>Clarified unit of measure in 185.4.b.</p>

## Scope and Purpose

This document specifies the publication of data in accordance with Transparency of Information requirements set forth in COMMISSION REGULATION (EU) 2017/1485 (hereafter referred to as the 'System Operational Guidelines' or SO GL).

SO GL requires publication to be done on information transparency platform (hereafter referred to as the 'ENTSO-E TP'.) established in accordance with Article 3 of Regulation (EU) No 543/2013 (hereafter referred to as the 'Transparency regulation' or TR).

The Transparency regulation provisions cover a vast range of subject matters. In order to obtain a complete picture, data consumers are encouraged to consider all available publications. The scope of this DDD is addressing the specific requirements raised by the SO GL only.

Specifications for validation, processing and publication on the transparency platform are detailed in the "Central Transparency Platform – Business Requirements Specification for SO GL", and in the corresponding Implementation Guide.

## Roles and responsibilities

This document assigns the responsibility for data submission to three parties:

Common data for a Synchronous Area shall be submitted to ENTSO-E by the Synchronous Area Monitor. The Synchronous Area Monitor is a single nominated TSO for each Synchronous Area. The TSO which fulfils this role is defined in the Synchronous Area Operational Agreement of each Synchronous Area.

Common data for an LFC Block shall be submitted to ENTSO-E by the LFC Block Monitor. The LFC Block Monitor is a single nominated TSO for each LFC Block. The TSO which fulfils this role is defined in the LFC Block Operational Agreement of each LFC Block.

- Other data shall be submitted to ENTSO-E by the concerned TSOs.

## DEFINITIONS AND ABBREVIATIONS

Term or abbreviation	Definition
SA	Synchronous Area - means an area covered by synchronously interconnected TSOs, such as the synchronous areas of Continental Europe, Great Britain, Ireland-Northern Ireland and Nordic and the power systems of Lithuania, Latvia and Estonia, together referred to as 'Baltic' which are part of a wider synchronous area as defined by article 2(2) of the SO GL

<b>SAOA</b>	Synchronous Area Operational Agreements – agreement between all TSOs of a synchronous area that contains the methodologies, conditions and values defined in article 118 of the SO GL
<b>LFCBOA</b>	Load Frequency Control Block Operational Agreements – agreement between all TSOs of a LFC block that contains the methodologies, conditions and values defined in article 119 of the SO GL
<b>Synchronous area monitor</b>	means a TSO responsible for collecting the frequency quality evaluation criteria data and applying the frequency quality evaluation criteria for a synchronous area as per article 2(158) of the SO GL
<b>LFC block monitor</b>	means a TSO responsible for collecting the frequency quality evaluation criteria data and applying the frequency quality evaluation criteria for a LFC block as outlined by article 2(139) of the SO GL
<b>SO GL</b>	Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation
<b>Primary owner of the data</b>	<p>Primary owner is defined by Transparency Regulation art 2(23).</p> <p>Within the context of SO GL transparency publications, the primary owner of data is the TSO responsible for collecting and making data from its LFC Area available to the relevant agent responsible for uploading data to the ENTSO-E transparency platform</p>
<b>Data provider</b>	Primary owner is defined by Transparency Regulation art 2(14).
<b>ISP</b>	Imbalance Settlement Period

## INFORMATION ON OPERATIONAL AGREEMENTS

Synchronous area and LFC block operational agreements	
<b>Regulation Article</b>	SO GL article 184.2 SO GL article 184.3
<b>Regulation text</b>	<p>Art. 184.2: “All TSOs of each synchronous area shall notify the contents of their synchronous area operational agreement to ENTSO for Electricity for publication no later than 1 week after its entry into force.”</p> <p>Art. 184.3: “Each TSO of each LFC block shall share the contents of its LFC block operational agreement with its regulatory authority or, where applicable, with another competent authority.”</p>
<b>Detailed description</b>	Proposed implementation approach to satisfy this article and the other methodology publication requirements is for each SA to publish its SAOA and optionally for each LFC-Block to publish its LFCBOA
<b>Specification of calculation</b>	<p>No calculations foreseen on the transparency platform.</p> <p>The following metadata shall be published together with the SAOA (and the LFCBOA, when applicable):</p> <ul style="list-style-type: none"> <li>– Synchronous Area</li> <li>– LFC Block (when applicable)</li> <li>– status [proposed/rejected with comments/revised proposal/NRA approved]</li> <li>– Entry-into-Force date (where known)</li> <li>– Version number</li> </ul>
<b>Primary owner of the data</b>	All TSOs of each synchronous area
<b>Data provider</b>	<p>The SAOA methodology texts relevant to each synchronous area will be published by the Synchronous Area Monitor of each Synchronous Area.</p> <p>Voluntary publication of the LFCBOA documents relevant to meeting other publication requirements may be performed by each LFC Block Monitor.</p>
<b>Publication deadline for ENTSO-E</b>	no later than 1 week after entry into force of the synchronous area operational agreements.

<b>Updates</b>	<p>Updates shall be published no later than 1 week after the entry into force of the updated SAOA or LFCBOA.</p> <p>Any revisions to the SAOA or LFCBOA which will follow the SO GL shall also be published.</p>
<b>Comments</b>	<p>Some Synchronous Areas and some LFC Blocks may not produce methods associated with articles 118 and 119.</p>



## INFORMATION ON FREQUENCY QUALITY

### Frequency quality parameters

Frequency quality parameters	
<b>Regulation Article</b>	SO GL article 185.1
<b>Regulation text</b>	Where the TSOs of a synchronous area propose to modify the values for the <b>frequency quality defining parameters</b> or the <b>frequency quality target parameter</b> in accordance with Article 127, they shall notify the modified values to ENTSO for Electricity for publication at least 1 month before the entry into force of the synchronous area operational agreement.
<b>Detailed description</b>	<p>This requirement is satisfied by publication of the same data contained within the SAOA when one of the parameters is changed.</p> <p>THERE IS NO REQUIREMENT TO PUBLISH ADDITIONAL INFORMATION UNDER THIS ARTICLE. The requirements have been met by publishing of Operational Agreements under SO GL art. 184.2&amp;3 on the ENTSO-E TP.</p>

## FRCE target parameters

FRCE target parameters	
<b>Regulation Article</b>	SO GL article 185.2, article 128.4 and article 119.1a
<b>Regulation text</b>	<p>185.2 Where applicable, all TSOs of each synchronous area shall notify the values of the <b>FRCE target parameters</b> for each LFC block and each LFC area to ENTSO for Electricity for publication at least 1 month before their applicability.</p> <p>128(4) Where an LFC block consists of more than one LFC area, all TSOs of the LFC block shall specify in the LFC block operational agreement the values of the FRCE target parameters for each LFC area.</p> <p>119(1a) Where the LFC block consists of more than one LFC area, FRCE target parameters for each LFC area defined in accordance with Article 128(4);</p>
<b>Detailed description</b>	THERE IS NO REQUIREMENT TO PUBLISH ADDITIONAL INFORMATION UNDER THIS ARTICLE. The requirements are covered by the publication of Operational Agreements under SO GL art. 184.2&3.

## Methodology for determining the risk of exhaustion of FCR

Methodology for determining the risk of exhaustion of FCR	
Regulation Article	SO GL article 185.3
Regulation text	All TSOs of each synchronous area shall notify the <b>methodology used to determine the risk of exhaustion of FCR</b> to ENTSO for Electricity for publication at least 3 months before the application of the synchronous area operational agreement.
Detailed description	THERE IS NO REQUIREMENT TO PUBLISH ADDITIONAL INFORMATION UNDER THIS ARTICLE. The requirements are covered by the publication of Operational Agreements under SO GL art. 184.2&3.

## Results of the criteria application process

Results of the criteria application process	
<b>Regulation Article</b>	SO GL article 185.4 and 133(3), 132, 131(1)
<b>Regulation text</b>	<p>The synchronous area monitor of each synchronous area shall notify the <b>results of the criteria application process</b> for their synchronous area to ENTSO for Electricity for publication within 3 months after the last time-stamp of the measurement period and at least four times a year. Those results shall include at least:</p> <p>(a) the values of the <b>frequency quality evaluation criteria</b> calculated for the synchronous area and for each LFC block within the synchronous area in accordance with Article 133(3); and</p> <p>(b) the <b>measurement resolution, measurement accuracy and calculation method</b> specified in accordance with Article 132;</p>
<b>Detailed description</b>	<p>Frequency quality evaluation criteria are defined in 3 parts: Art 131.1a for all SAs, Art 131.1b additional info for CE and Nordic and in Art 131.1.c additional info for IE/NL and GB. Please refer to Annex 1 for details.</p> <p>The definitions of the 'Frequency quality defining parameters of the synchronous areas' are to be found in each SA's SAOA.</p> <p>For SO GL art. 185.4.b, the measurement resolution, measurement accuracy and calculation method for publication are provided with single values applying to the entire quarter.</p> <p>For each SA the following details are reported:</p> <ul style="list-style-type: none"> <li>• Measurement resolution of the system frequency (integer value in mHz);</li> <li>• Measurement frequency of the system frequency (integer value in seconds);</li> <li>• Measurement accuracy of the system frequency (integer value in mHz);</li> <li>• Descriptor of how system frequency is measured and determined and how the accuracy is determined. This may include information on how multiple high-resolution values from more than one location are combined into one Synchronous Area reference value for each data point in the data-set (text 4000 characters).</li> </ul> <p>For LFC blocks in the CE and Nordic SAs the following values are reported:</p> <ul style="list-style-type: none"> <li>• Measurement resolution of the FRCE (decimal value in MW);</li> <li>• Measurement accuracy of the FRCE (decimal value in MW);</li> <li>• Descriptor of how system frequency is measured and determined and how the accuracy is determined (text 4000 characters);</li> <li>• Descriptor of how FRCE for the LFC Block is calculated and how its accuracy is determined (text 4000 characters);</li> </ul>

<b>Specification of calculation</b>	<p>Synchronous area monitor will undertake calculations according to SO GL article 131.1a and base their calculations upon the frequency data-set (of at least 10 second frequency of measurement and 10mHz frequency resolution) for their SA.</p> <p>Each LFC Block monitor in the CE and Nordic areas must first transform the FRCE data of their LFC Block by performing an arithmetic mean of higher resolution FRCE values into one FRCE value for each time period of duration equal to the time-to-restore frequency for the whole reporting period, ensuring that the system state was always in a 'normal' or an 'alert' state and no other at any point within that period. For the avoidance of doubt, where the system enters an 'emergency', 'black-out' or 'recovery' state at any point in that period the data value will be excluded from the new data-series. From this new data series, each LFC Block monitor of CE and Nordic will then calculate values per LFC block for SO GL art. 131.1.b.i as detailed in Annex 1.</p> <p>Each LFC Block monitor in the CE and Nordic areas must first average their FRCE data set into one FRCE average value for each minute within each calendar month. From this new data set each LFC Block Monitor of CE and Nordic will calculate values per LFC block for SO GL art. 131.1.b.ii as detailed in Annex 1. Each Synchronous Area Monitor in GB and Ireland (IE/NI) must first transform their FRCE data by performing an arithmetic mean of higher resolution FRCE values into one FRCE value per minute and the data-series must contain values for the whole reporting period, ensuring that the system state was always in a 'normal' or an 'alert' state and no other at any point within that period. For the avoidance of doubt, where the system enters an 'emergency', 'black-out' or 'restoration' state at any point in that period the data value will be excluded from the new data-series. From this data set each SA Monitor will calculate values per LFC block for SO GL art. 131.1.c as detailed in Annex 1.</p> <p>The transparency platform does not need to make any calculations.</p>
<b>Primary owner of the data</b>	<p>Synchronous area monitor LFC block monitor</p>

<b>Data provider</b>	<p>According to SO GL article 133.4, the synchronous area monitor shall collect the frequency quality evaluation data of its synchronous area and perform the criteria application process. The LFC block monitor shall deliver the frequency quality evaluation data of the LFC block and its LFC areas.</p> <p>Per SA, Synchronous area monitor for each synchronous area:</p> <ul style="list-style-type: none"> <li>- data required by SO GL art. 185.4.a as specified by SO GL art. 131.1.a</li> <li>- data required by SO GL art. 185.4.b as specified by SO GL art. 132</li> </ul> <p>Per LFC block in the CE and Nordic SAs, LFC block monitors:</p> <ul style="list-style-type: none"> <li>- data required by SO GL art. 185.4.b as specified by SO GL art. 132</li> <li>- data required by SO GL art. 185.4.a as specified by SO GL art. 131.1.b</li> </ul> <p>Per SA and LFC block in the SAs of GB and Ireland (IE/NI), SA monitors:</p> <ul style="list-style-type: none"> <li>- data required by SO GL art. 185.4.a as specified by SO GL art. 131.1.c</li> </ul>
<b>Publication deadline for ENTSO-E</b>	3 months after the end of the quarter that the data describes.
<b>Updates</b>	Normally not foreseen.
<b>Comments</b>	<p>The reporting of frequency data may not be reported until the SAOA methods about Load Frequency Control Structure has been approved by competent NRAs and implemented.</p> <p>TSO frequency measurement accuracy should not be worse than what is required for FCR control as specified in SO GL ANNEX V (relative to article 154). FCR minimum technical requirements is 10 mHz or the industrial standard if better.</p> <p>FRCE values for CE and Nordic SAs are calculated from a frequency data set that is not necessarily the same as the operational metering values from tie-lines on the periphery of the LFC Blocks.</p> <p>The FRCE values for GB and Ireland are a function of frequency deviation in mHz.</p>

## Ramping period

Ramping period	
<b>Regulation Article</b>	SO GL article 185.5
<b>Regulation text</b>	All TSOs of each synchronous area shall notify the ramping period specified in accordance with Article 136 to ENTSO for Electricity for publication at least 3 months before their applicability.
<b>Detailed description</b>	THERE IS NO REQUIREMENT TO PUBLISH ADDITIONAL INFORMATION UNDER THIS ARTICLE. The requirements are covered by the publication of Operational Agreements under SO GL art. 184.2&3.
<b>Comments</b>	Ramping rules for interconnectors/virtual tie-lines between AC interconnected LFC Areas is to be found in the SAOA.

## INFORMATION ON LOAD-FREQUENCY CONTROL STRUCTURE

### Process activation and responsibility structure

Process activation and responsibility structure	
<b>Regulation Article</b>	SO GL article 186.1
<b>Regulation text</b>	All TSOs of each synchronous area shall notify the following information to ENTSO for Electricity for publication at least 3 months before the application of the synchronous area operational agreement: (a) information on the <b>process activation structure</b> of the synchronous area, including at least information on the monitoring areas, LFC areas and LFC blocks defined and their respective TSOs; and (b) information on the <b>process responsibility structure</b> of the synchronous area, including at least information on the processes developed in accordance with Article 140(1) and (2).
<b>Detailed description</b>	THERE IS NO REQUIREMENT TO PUBLISH ADDITIONAL INFORMATION UNDER THIS ARTICLE. The requirements are covered by the publication of Operational Agreements under SO GL art. 184.2&3.



## Imbalance netting process

Imbalance netting process	
<b>Regulation Article</b>	SO GL article 186.2
<b>Regulation text</b>	All TSOs implementing an imbalance netting process shall publish information regarding that process which shall include at least the list of participating TSOs and the starting date of the imbalance netting process.
<b>Detailed description</b>	For each synchronous area, the LFC areas participating in the imbalance netting process and their respective start dates.
<b>Specification of calculation</b>	No calculations foreseen/performed on transparency platform.
<b>Primary owner of the data</b>	TSOs
<b>Data provider</b>	Synchronous Area Monitor of each Synchronous Area
<b>Publication deadline for ENTSO-E</b>	As per SO GL article 186.1; 3 months before TSO joins the imbalance netting process
<b>Updates</b>	Whenever a TSO joins the process
<b>Comments</b>	

## INFORMATION ON FCR

### Dimensioning approach for FCR

Dimensioning approach for FCR	
<b>Regulation</b>	SO GL article 187.1
<b>Regulation text</b>	All TSOs of each synchronous area shall notify the dimensioning approach for FCR for their synchronous area in accordance with Article 153(2) to ENTSO for Electricity for publication at least 1 month before its applicability.
<b>Detailed description</b>	THERE IS NO REQUIREMENT TO PUBLISH ADDITIONAL INFORMATION UNDER THIS ARTICLE. The requirements are covered by the publication of Operational Agreements under SO GL art. 184.2&3.

## FCR amount and shares

FCR amount and shares	
<b>Regulation Article</b>	SO GL article 187.2 and article 153.1
<b>Regulation text</b>	<p>187.2 Where applicable, all TSOs of each synchronous area shall notify the <b>total amount of reserve capacity on FCR</b> and <b>the shares of reserve capacity on FCR required for each TSO</b> specified in accordance with Article 153(1) as the initial FCR obligation to ENTSO for Electricity for publication at least 1 month before their applicability.</p> <p>153.1 - All TSOs of each synchronous area shall determine, at least annually, the reserve capacity for FCR required for the synchronous area and the initial FCR obligation of each TSO in accordance with paragraph 2.</p>
<b>Detailed description</b>	<p>For each synchronous area, the total required volume of FCR shall be published. The corresponding share per LFC block within the synchronous area, shall also be published.</p> <p>Share of FCR capacity is defined by SO GL art. 153.2.d: <i>“the shares of the reserve capacity on FCR required for each TSO as initial FCR obligation shall be based on the sum of the net generation and consumption of its control area divided by the sum of net generation and consumption of the synchronous area over a period of 1 year.”</i></p> <p>Total required volume and share are reported as follows:</p> <ul style="list-style-type: none"> <li>- Area: Synchronous area or LFC block, as applicable</li> <li>- calendar year</li> <li>- direction as applicable: Up, Down, Symmetric</li> <li>- Quantity expressed in MW</li> </ul> <p>Resolution is yearly, i.e. single values per calendar year.</p>
<b>Specification of calculation</b>	No calculations foreseen on transparency platform.
<b>Primary owner of the data</b>	TSOs shall ensure that the Synchronous Area Monitor has up-to-date data values for its LFC Area at least 2 weeks prior to publication.
<b>Data provider</b>	Synchronous Area Monitor shall publish the total required capacity for its Synchronous Area for the coming year as well as the shares of reserve capacity on FCR required for each LFC block.
<b>Publication deadline for ENTSO-E</b>	1 month before the calendar year for which the values apply.

<b>Updates</b>	Normally not foreseen.
<b>Comments</b>	For specific dimensioning rules per SA please refer to SO GL art. 153.

## FCR properties

FCR properties	
Regulation Article	SO GL article 187.3
Regulation text	All TSOs of each synchronous area shall notify the <b>FCR properties</b> established for their synchronous area in accordance with Article 154(2) and the <b>additional requirements for FCR providing groups</b> in accordance with Article 154(3) to ENTSO for Electricity for publication at least 3 months before their applicability.
Detailed description	THERE IS NO REQUIREMENT TO PUBLISH ADDITIONAL INFORMATION UNDER THIS ARTICLE. The requirements are covered by the publication of Operational Agreements under SO GL art. 184.2&3.

## INFORMATION ON FRR

### FRR requirements

FRR requirements	
Regulation Article	SO GL article 188.1
Regulation text	All TSOs of each LFC block shall notify the <b>FRR availability requirements</b> and <b>requirements for the control quality</b> specified in accordance with Article 158(2) and the <b>technical requirements for the connection</b> specified in accordance with Article 158(3) for their LFC block to ENTSO for Electricity for publication at least 3 months before their applicability.
Detailed description	THERE IS NO REQUIREMENT TO PUBLISH ADDITIONAL INFORMATION UNDER THIS ARTICLE. The requirements are covered by the publication of Operational Agreements under SO GL art. 184.2&3.

## FRR dimensioning rules

FRR dimensioning rules	
<b>Regulation</b>	SO GL article 188.2
<b>Regulation text</b>	All TSOs of each LFC block shall notify the <b>FRR dimensioning rules</b> specified for their LFC block in accordance with Article 157(1) to ENTSO for Electricity for publication at least 3 months before the applicability of the LFC block operational agreement.
<b>Detailed description</b>	THERE IS NO REQUIREMENT TO PUBLISH ADDITIONAL INFORMATION UNDER THIS ARTICLE. The requirements are covered by the publication of Operational Agreements under SO GL art. 184.2&3.

## Outlook of the reserve capacities on FRR

Outlook of the reserve capacities on FRR	
<b>Regulation Article</b>	SO GL article 188.3
<b>Regulation text</b>	All TSOs of each synchronous area shall notify, by 30 November of each year, an outlook of the reserve capacities on FRR of each LFC block for the next year to ENTSO for Electricity for publication.
<b>Detailed description</b>	<p>Only explicitly required reserves should be reported.</p> <p>The TSOs of each LFC Area shall provide their LFC Block Monitor with their outlook for their LFC areas for the next calendar year. This information must be provided at least 2 weeks before the legal publication deadline.</p> <p>The data shall be published ex-ante.</p> <p>The forecast is submitted to transparency platform with the following attributes:</p> <ul style="list-style-type: none"> <li>-LFC block</li> <li>-Year</li> <li>-Required Reserve type: FRR</li> <li>-Direction: Up, Down</li> <li>-Outlook of reserve capacity</li> </ul> <p>Unit of measurement is MW.</p> <p>Data is provided for the entire year with quarterly resolution (i.e. one set of values per 3 months).</p>
<b>Specification of calculation</b>	The LFC Block Monitor of each LFC Block shall report required FRR values for its LFC Block (if required by local reserve capacity market structure) No calculations foreseen/performed on transparency platform.
<b>Primary owner of the data</b>	TSOs to provide data to LFC Block Monitor
<b>Data provider</b>	LFC Block monitor of each LFC Block
<b>Publication deadline for ENTSO-E</b>	By 30 November each year for data covering the next calendar year.
<b>Updates</b>	Normally not expected.



Comments	Data will be published on a common view, with filter for reserve types.
----------	---

## Actual reserve capacities on FRR

Actual reserve capacities on FRR	
<b>Regulation Article</b>	SO GL article 188.4
<b>Regulation text</b>	All TSOs of each synchronous area shall notify, within 30 days after the end of the quarter, the <b>actual reserve capacities on FRR</b> of each LFC block of the past quarter to ENTSO for Electricity for publication.
<b>Detailed description</b>	<p>This publication shall reflect actual FRR capacity ex-post per reserve type and direction. FRR may be procured as balancing capacity or offered as voluntary bids of balancing energy; the published values shall indicate the total.</p> <p>The TSOs of each LFC Area will provide their LFC Block Monitor with the FRR reserves for their LFC Block for the previous quarter (3-month period) within 30 calendar days after the end of the quarter and no later than 7 calendar days before the legal publication deadline for TSOs.</p> <p>The LFC Block Monitor of each LFC Block shall collect and aggregate the individual TSO FRR actual values for its LFC Block and submit these aggregate values to the transparency platform.</p> <p>The actual values are submitted to transparency platform with the following attributes:</p> <ul style="list-style-type: none"> <li>- Reserve type: FRR</li> <li>- LFC block</li> <li>- Quarter</li> <li>- Direction: Up or Down</li> <li>- Minimum, maximum and average actual available reserve capacity</li> </ul> <p>Data is provided with quarterly resolution, i.e. a single set of values for the entire quarter. Data shall describe the entire quarter. Unit of measurement is MW. Data is provided with integer precision.</p>
<b>Specification of calculation</b>	The transparency platform need not make any calculations.
<b>Primary owner of the data</b>	TSOs
<b>Data provider</b>	LFC Block monitor of each LFC Block
<b>Publication deadline for ENTSO-E</b>	Within 30 days after the end of the quarter

Updates	Normally not expected.
---------	------------------------

Comments	Forecast and actual FRR and RR capacities will be published on a common view, with filter for reserve types.
----------	--

## INFORMATION ON RR

### RR requirements

RR requirements	
<b>Regulation Article</b>	SO GL article 189.1
<b>Regulation text</b>	All TSOs of each LFC block that operates a reserve replacement process shall notify the <b>RR availability requirements</b> specified in accordance with Article 161(2) and the <b>technical requirements for the connection</b> specified in accordance with Article 161(3) for their LFC block available to ENTSO for Electricity for publication within 3 months before their applicability.
<b>Detailed description</b>	THERE IS NO REQUIREMENT TO PUBLISH ADDITIONAL INFORMATION UNDER THIS ARTICLE. The requirements are covered by the publication of Operational Agreements under SO GL art. 184.2&3.

## Outlook of the reserve capacities on RR

Outlook of the reserve capacities on RR	
<b>Regulation Article</b>	SO GL article 189.2
<b>Regulation text</b>	All TSOs of each synchronous area shall notify, by 30 November of each year, an outlook of the reserve capacities RR of each LFC block for the following year to ENTSO for Electricity for publication.
<b>Detailed description</b>	<p>Only explicitly required reserves should be reported.</p> <p>The Forecast RR reserve capacity needs are only published where that LFC Block or a constituent LFC Area operates an RR Process. The Forecast RR reserve capacity needs are interpreted as the explicit capacity procurement requirements of each TSO of each LFC Area (or from the TSO responsible for determining this for the LFC Block where a single procurement exercise for the entire block takes place).</p> <p>The TSOs of each LFC Area will provide their LFC Block Monitor with a forecast of need for RR reserves for their LFC Block for the next calendar year.</p> <p>This information must be provided at least 2 weeks before the legal publication deadline by TSOs to their LFC Block monitor.</p> <p>The LFC Block Monitor of each LFC Block shall aggregate the individual TSO RR forecast values for its LFC Block (if required by local reserve capacity market structure) and submit these aggregate values to the transparency platform.</p> <p>The forecast is submitted to transparency platform with the following attributes:</p> <ul style="list-style-type: none"> <li>- LFC block</li> <li>- Year</li> <li>- Direction: Up, Down</li> <li>- Outlook of reserve capacity</li> </ul> <p>Reserve capacity is provided with integer precision.</p> <p>Data is provided for the entire year with quarterly resolution (i.e. one set of values per 3 months). Unit of measurement is MW.</p>

<b>Specification of calculation</b>	The transparency platform need not make any calculations.
<b>Primary owner of the data</b>	TSOs
<b>Data provider</b>	LFC Block Monitor for all LFC Blocks that operate a Reserve Replacement Process will create an aggregate data-set of all data provided by TSOs and will be responsible for publishing this to the ENTSO-E Transparency Platform.
<b>Publication deadline for ENTSO-E</b>	By 30 November each year
<b>Updates</b>	Normally not expected.
<b>Comments</b>	FRR and RR capacities will be published on a common view, with filter for reserve types.

## Actual reserve capacities on RR

Actual reserve capacities on RR	
<b>Regulation Article</b>	SO GL article 189.3
<b>Regulation text</b>	All TSOs of each synchronous area shall notify, within 30 days after the end of the quarter, the <b>actual reserve capacities RR</b> of each LFC block of the past quarter to ENTSO for Electricity for publication.
<b>Detailed description</b>	<p>This publication shall reflect actual RR capacity ex-post per reserve type and direction. RR may be procured as balancing capacity or offered as voluntary bids of balancing energy; the published values shall indicate the total.</p> <p>The TSOs of each LFC Area will provide their LFC Block Monitor with the RR reserves for their LFC Block for the previous quarter (3-month period) within 30 calendar days after the end of the quarter and no later than 7 calendar days before the legal publication deadline for TSOs.</p> <p>The LFC Block Monitor of each LFC Block shall aggregate the individual TSO RR actual values for its LFC Block and submit these aggregate values to the transparency platform.</p> <p>The actual values are submitted to transparency platform with the following attributes:</p> <ul style="list-style-type: none"> <li>- Reserve type: RR</li> <li>- LFC block</li> <li>- Quarter</li> <li>- Direction: Up, Down</li> <li>- Minimum, maximum and average actual available reserve capacity</li> </ul> <p>Data shall describe the entire quarter. Unit of measurement is MW. Data is provided with quarterly resolution, i.e. a single set of values for the entire quarter. Data is provided with integer precision.</p>
<b>Specification of calculation</b>	The transparency platform need not make any calculations.
<b>Primary owner of the data</b>	TSOs
<b>Data provider</b>	LFC Block Monitor for all LFC Blocks that operate a Reserve Replacement Process.
<b>Publication deadline for ENTSO-E</b>	Within 30 days after the end of the quarter, first publication <b>30 April 2020</b>
<b>Updates</b>	Normally not expected.



<b>Comments</b>	Forecast and actual FRR and RR capacities will be published on a common view, with filter for reserve types.
-----------------	--

## INFORMATION ON SHARING AND EXCHANGE

### Sharing of FRR and RR in the same Synchronous Area

Sharing of FRR and RR in the same Synchronous Area	
<b>Regulation Article</b>	SO GL article 190.1
<b>Regulation text</b>	<p>All TSOs of each synchronous area shall notify the <b>annual compilations of the agreements for the sharing of FRR and for the sharing of RR</b> for each LFC block <b>within the same synchronous area</b> to ENTSO for Electricity for publication in accordance with Articles 188(3) and 189(2). Those compilations shall include the following information:</p> <p>(a) the identity of the LFC blocks where there is an agreement for the sharing of FRR or RR; and</p> <p>(b) the share of FRR and RR reduced due to each agreement for the sharing of FRR or RR.</p>
<b>Detailed description</b>	<p>SO GL art. 3(2)(97) defines sharing of reserves as “a mechanism in which more than one TSO takes the same reserve capacity, being FCR, FRR or RR, into account to fulfil their respective reserve requirements resulting from their reserve dimensioning processes”.</p> <p>Agreements for common dimensioning are considered sharing agreements. Agreements for common procurement of balancing capacity are considered sharing agreements if they reduce the dimensioning need for at least one TSO. If common reserve dimensioning is defined by the SAOA or the LFCBOA, if published, no additional publication is foreseen under this article. No publication is required if no sharing agreement exists.</p> <p>Each TSO shall submit to their LFC Block Monitor ex-ante data describing the sharing agreements with other LFC areas and the related reduction of FRR or RR capacity in its LFC area. TSO should submit its data to the LFC Block Monitor by 2 weeks before the publication deadline. In a second step, each LFC block monitor will submit to transparency platform aggregated data describing the reduction of FRR or RR capacity in its LFC block.</p> <p>FRR shall be reported separately per mFRR and aFRR.</p> <p>The shared volume represents the maximum potential reduction.</p> <p>The reduction in capacity is described per each agreement by the following set of attributes:</p> <ul style="list-style-type: none"> <li>- Validity period of agreement</li> <li>- Reserve type: aFRR, mFRR or RR</li> <li>- Direction: Up, Down</li> <li>- Area: LFC area or LFC block, as applicable</li> </ul>

	<p>- The reduction of reserve capacity in the area</p> <p>The reduction is reported as a single value applicable for the entire validity period per each agreement.</p> <p>The data shall describe LFC areas sharing the reserve when TSOs submit data to LFC block monitor. The data submitted by LFC block monitor to transparency platform shall describe the aggregated reduction in its LFC block.</p> <p>The reduction is expressed in MW with integer precision.</p>
<b>Specification of calculation</b>	The transparency platform need not make any calculations.
<b>Primary owner of the data</b>	TSO
<b>Data provider</b>	LFC Block Monitor
<b>Publication deadline for ENTSO-E</b>	<p>By default no later than 30 November each year covering the data for the next calendar year.</p> <p>One month prior to the start of the validity period of any agreement concluded within the calendar year when the beginning of the validity period falls within the calendar year.</p>
<b>Updates</b>	By default, all data shall be submitted in advance of the calendar year in which the agreements are in effect. A supplementary submission shall occur should an agreement be concluded within the calendar year and taking effect therein.
<b>Comments</b>	

## Sharing of FCR between Synchronous Areas

Sharing of FCR between Synchronous Areas	
<b>Regulation</b>	SO GL article 190.2
<b>Regulation text</b>	<p>All TSOs of each synchronous area shall notify the information on the <b>sharing of FCR between synchronous areas</b> to ENTSO for Electricity for publication in accordance with Article 187(1). That information shall include the following:</p> <p>(a) the amount of shared reserve capacity on FCR between TSOs that entered into agreements for the sharing of FCR; and</p> <p>(b) the effects of the sharing of FCR on the reserve capacity on FCR of the involved TSOs.</p>
<b>Detailed description</b>	<p>SO GL art. 3(2)(97) defines sharing of reserves as “a mechanism in which more than one TSO takes the same reserve capacity, being FCR, FRR or RR, into account to fulfil their respective reserve requirements resulting from their reserve dimensioning processes”</p> <p>Agreements for common dimensioning are considered sharing agreements. Agreements for common procurement of balancing capacity are considered sharing agreements if they reduce the dimensioning need for at least one TSO. No publication is required if no sharing agreement exists.</p> <p>Each TSO shall submit to their SA Monitor ex-ante data describing the agreements with TSOs in other synchronous areas on sharing FCR capacity in to or out of their LFC area via a HVDC link connected to their LFC area and the related reduction of FCR capacity in its own LFC area. TSO should submit its data to the SA Monitor by 2 weeks before the publication deadline.</p> <p>In a second step, each SA Monitor will submit to the transparency platform aggregated data describing the amount of shared reserve capacity and the reduction of FCR capacity in its synchronous area.</p> <p>Data submitted by individual TSOs as well as by SA Monitor shall detail the following:</p> <ul style="list-style-type: none"> <li>- Validity period of agreement</li> <li>- Reserve type: FCR</li> <li>- Direction: Up, Down or Symmetric</li> <li>- Area: LFC area or SA, as applicable</li> <li>- the shared volume per area</li> <li>- the reduction of reserve capacity in the area</li> </ul> <p>Data is provided as a single value applicable to the entire validity period of the agreement. Shared volume and reduction are expressed in MW with integer precision.</p>

<b>Specification of calculation</b>	No calculations foreseen on transparency platform.
<b>Primary owner of the data</b>	All TSOs with a HVDC interconnection with LFC Areas in one or more other Synchronous Areas.
<b>Data provider</b>	TSOs will submit LFC area level data to SA Monitor. SA Monitor will submit aggregated data for entire SA to transparency platform.
<b>Publication deadline for ENTSO-E</b>	By 30 November each year covering the data for the next calendar year
<b>Updates</b>	By default, all data shall be submitted in advance of the calendar year in which the agreements are in effect. A supplementary submission shall occur should an agreement be concluded within the calendar year and taking effect therein.
<b>Comments</b>	

## Exchange of reserves (within SA or between SAs)

Exchange of reserves (within SA or between SAs)	
<b>Regulation Article</b>	SO GL article 190.3
<b>Regulation text</b>	Where applicable, all TSOs shall publish the information on the exchange of FCR, FRR and RR.
<b>Detailed description</b>	<p>This requirement applies to exchange of reserves as defined in SO GL art. 3(96): “the possibility of a TSO to access reserve capacity connected to another LFC area, LFC block, or synchronous area to fulfil its reserve requirements resulting from its own reserve dimensioning process of either FCR, aFRR, mFRR or RR and where that reserve capacity is exclusively for that TSO, and is not taken into account by any other TSO to fulfil its reserve requirements resulting from their respective reserve dimensioning processes”</p> <p>Exchanges within a synchronous area and between synchronous areas are both within scope. Only exchange of balancing capacity shall be considered. Such exchange may occur as defined in EB GL articles 38 through 42 and 33 to 34.</p> <p>There are two requirements:</p> <ul style="list-style-type: none"> <li>a) The Exchange of FCR, FRR and RR reserves within the same Synchronous Area.</li> <li>b) The Exchange of FCR, FRR and RR reserves between different Synchronous Areas.</li> </ul> <p>Exchange of reserves can be bilateral, or if reserve procurement is done in cooperation among several TSOs, multilateral. If more than two parties exchange reserves, the exchange may not be available per border. Therefore, the information on the exchange of reserves shall be published as a reserve capacity surplus or deficit calculated as the locally connected reserve volume minus the local need according to the dimensioning process. As a reminder, dimensioning is performed per LFC block for FRR and RR and per SA for FCR.</p>

	<p>Two simple examples may illustrate this:</p> <p>1) TSOs A and B in LFC areas ZA and ZB need 100 MW each of aFRR in upward direction. TSO A procures 110 MW, whereas TSO B procures 90 MW, and 10 MW is exchanged between the parties. Surplus in ZA is 10 MW, corresponding to the deficit in ZB.</p> <p>2) TSOs A, B, C and D in LFC areas ZA, ZB, ZC and ZD need 100 MW each of aFRR in upward direction. In a common procurement, 110 MW is contracted in each of the zones ZA and ZB, whereas ZC and ZD provide 95 MW and 85 MW. The exchange cannot be clearly described in bilateral terms. But the aFRR surplus/deficit may be seen as 10 MW, 10 MW, -5 MW and -15 MW, respectively, for the LFC areas.</p> <p>FRR data shall be reported separately for aFRR and mFRR.</p> <p>Each exchange of reserves shall be described by the following attributes:</p> <ul style="list-style-type: none"> <li>- LFC Block or LFC area</li> <li>- The time interval during which reserves will be exchanged</li> <li>- Reserve type: RR, aFRR, mFRR or FCR</li> <li>- Direction: Up, Down or Symmetric</li> <li>- Reserve capacity export or import</li> </ul> <p>Capacity is expressed in MW with integer precision and ISP resolution.</p>
<b>Specification of calculation</b>	The transparency platform does not need to make any calculations.
<b>Primary owner of the data</b>	TSO
<b>Data provider</b>	TSO
<b>Publication deadline for ENTSO-E</b>	No later than six hours before the use of the exchanged reserve capacity, aligning with the deadline for the publication of allocated cross-zonal capacity under EB GL art. 12.3.h, or as soon as possible if the exchange is planned later.
<b>Updates</b>	Normally not expected.
<b>Comments</b>	<p>The allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves is published under EB GL art. 12.3.h.</p> <p>Information on the mechanisms for exchange of balancing capacity are published under EB GL art. 12.3.g and j. The rules for the exchange of balancing capacity are covered under Article 33 (and 34 if applicable) of the EB Regulation</p>

## APPENDIX – VALUES FOR FREQUENCY QUALITY EVALUATION CRITERIA

The following table specifies the publications foreseen per synchronous area as required by SO GL articles 131.1.a:

Reference	Data item	Applicability					Timeframe and format
		CE SA	Nordic SA	GB SA	IE/NL SA	Baltic SA	
Article 131.1.a.i	the mean value of the instantaneous frequency data	yes	yes	yes	yes	no	1 value per month
Article 131.1.a.ii	the standard deviation of the instantaneous frequency data	yes	yes	yes	yes	no	1 value per month
Article 131.1.a.iii	the 1-,5-,10-, 90-,95- and 99-percentile for the instantaneous frequency data	yes	yes	yes	yes	no	1 value per month
Article 131.1.a.iv	the total time in which the absolute value of the instantaneous frequency deviation was larger than the standard frequency deviation, distinguishing between negative and positive instantaneous frequency deviations;	yes	yes	yes	yes	no	1 value for negative deviations and 1 value for positive deviations per month
Article 131.1.a.v	the total time in which the absolute value of the instantaneous frequency deviation was larger than the maximum instantaneous frequency deviation, distinguishing between negative and positive instantaneous frequency deviations	yes	yes	yes	yes	no	1 value for negative deviations and 1 value for positive deviations per month
Article 131.1.a.vi	the number of events in which the absolute value of the instantaneous frequency deviation of the synchronous area exceeded 200 % of the standard frequency deviation and the instantaneous frequency deviation was not returned to 50 % of the standard frequency deviation within the time to restore frequency. The data shall distinguish between negative and positive frequency deviations	yes	no	no	no	no	1 value for negative deviations and 1 value for positive deviations per month
Article 131.1.a.vi	the number of events in which the absolute value of the instantaneous frequency deviation of the synchronous area exceeded 200 % of the standard frequency deviation and the instantaneous frequency deviation was not returned to the frequency restoration range within the time to restore frequency. The data shall distinguish between negative and positive frequency deviations	no	yes	yes	yes	no	1 value for negative deviations and 1 value for positive deviations per month
Article 131.1.a.vii	the number of events for which the absolute value of the instantaneous frequency deviation was outside of the frequency recovery range and was not returned to the frequency recovery range within the time to recover frequency, distinguishing between negative and positive frequency deviations;	no	no	yes	yes	no	1 value for negative deviations and 1 value for positive deviations per month

The following table specifies the publications foreseen per LFC block as required by SO GL articles 131.1.b and c:



# DETAILED DATA DESCRIPTIONS OF SO GL TRANSPARENCY REQUIREMENTS



Final draft 2.0 | 3 May 2021

Reference	Data item	Applicability					Timeframe and format
		CE SA	Nordic SA	GB SA	IE/NI SA	Baltic SA	
Article 131.1.b.i	the mean value of FRCE over time intervals equal to the time to restore frequency	yes	yes	no	no	no	1 integer value in MW per month
Article 131.1.b.i	the standard deviation of FRCE over time intervals equal to the time to restore frequency	yes	yes	no	no	no	1 integer value per month
Article 131.1.b.i	the 1-,5-,10-, 90-,95- and 99-percentile of FRCE over time intervals equal to the time to restore frequency	yes	yes	no	no	no	1 integer value in MW per month
Article 131.1.b.i	the number of time intervals in which the average value of the FRCE was outside the Level 1 FRCE range, distinguishing between negative and positive FRCE	yes	yes	no	no	no	1 integer value for negative FRCE and 1 integer value for positive FRCE per month
Article 131.1.b.i	the number of time intervals in which the average value of the FRCE was outside the Level 2 FRCE range, distinguishing between negative and positive FRCE	yes	yes	no	no	no	1 integer value for negative FRCE and 1 integer value for positive FRCE per month
Article 131.1.b.ii	for a data-set containing the average values of the FRCE of the LFC block over time intervals with a length of one minute: the number of events on a monthly basis for which the FRCE exceeded 60 % of the reserve capacity on FRR and was not returned to 15 % of the reserve capacity on FRR within the time to restore frequency, distinguishing between negative and positive FRCE	yes	yes	no	no	no	1 integer value for negative FRCE and 1 integer value for positive FRCE per month
Article 131.1.c	for a data-set containing the average values of the FRCE of the LFC block over time intervals with a length of one minute: the number of events for which the absolute value of the FRCE exceeded the maximum steady-state frequency deviation and the FRCE was not returned to 10 % of the maximum steady-state frequency deviation within the time to restore frequency, distinguishing between negative and positive FRCE	no	no	yes	yes	no	1 integer value for negative FRCE and 1 integer value for positive FRCE per month