
**All CE TSOs' proposal for the dimensioning rules
for FCR in accordance with Article 153(2) of the
Commission Regulation (EU) 2017/1485 of 2
August 2017 establishing a guideline on
electricity transmission system operation**

08.08.2018

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All Transmission System Operators of synchronous area Continental Europe are taking into account the following;

Whereas

- (1) This document is a common proposal developed by all Transmission System Operators of synchronous area CE (hereafter referred to as “TSOs”) regarding the development of a proposal for the dimensioning rules for FCR (hereafter referred to as “FCR dimensioning rules proposal”) in accordance with Article 153 of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as “SO GL”).
- (2) The FCR dimensioning rules proposal takes into account the general principles and goals set in the SO GL as well as Regulation (EC) No 714/2009 of the European Parliament and the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity (hereafter referred to as “Regulation (EC) No 714/2009”). The goal of the SO GL is the safeguarding of operational security, frequency quality and the efficient use of the interconnected system and resources. It sets for this purpose rules to determine the reserve capacity for FCR required for the synchronous area CE, which shall cover at least the reference incident, and also set rules to determine the shares of the reserve capacity on FCR required for each TSO of CE as initial FCR obligation.
- (3) The scope of the FCR dimensioning rules proposal is to establish rules to dimension the reserve for FCR required, while respecting the requirements set in Article 153(2) of the SO GL.
- (4) According to Article 6 of the SO GL, the expected impact of the FCR dimensioning rules proposal on the objectives of the SO GL has to be described. It is presented below. The proposed FCR dimensioning rules proposal generally contributes to the achievement of the objectives of the Article 4(1) of the SO GL.
- (5) In particular, the FCR dimensioning rules proposal responds to the objectives of SO GL to determine common operational security requirements, and to ensure the conditions for maintaining operational security and frequency quality level throughout the Union, by establishing rules for the adequate dimensioning capacity for FCR, which is essential to stabilize the system frequency at a stationary value after any imbalance between generation and consumption.
- (6) In conclusion, the FCR dimensioning rules proposal contributes to the general objectives of the SO GL to the benefit of all market participants and electricity end consumers.

SUBMIT THE FOLLOWING FCR DIMENSIONING RULES PROPOSAL TO ALL REGULATORY AUTHORITIES:

Article 1 Subject matter and scope

The FCR dimensioning rules as determined in this proposal shall be considered as the common proposal of all TSOs of CE in accordance with Article 153(2) of SO GL.

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Article 2 Definitions and interpretation

- 50 1. For the purposes of the FCR dimensioning rules proposal, terms used in this document shall have the
51 meaning of the definitions included in Article 3 of the SO GL, Article 2 of Regulation (EC) 714/2009,
52 Article 2 of Directive 2009/72/EC and Article 2 of Commission Regulation (EU) 543/2013.
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- 54 2. In this FCR dimensioning rules proposal, unless the context requires otherwise:
55 a) the singular indicates the plural and vice versa;
56 b) the table of contents and headings are inserted for convenience only and do not affect the
57 interpretation of this FCR dimensioning rules proposal; and
58 c) any reference to legislation, regulations, directive, order, instrument, code or any other enactment
59 shall include any modification, extension or re-enactment of it then in force.

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Article 3 Dimensioning rules for the TSOs of the synchronous area CE

62 The FCR dimensioning for the synchronous area CE in positive and negative direction is equal to the
63 reference incident of 3000 MW, according to SO GL article 153(2b.i).

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65 The shares of the reserve capacity on FCR required for each TSO P_i as initial FCR obligation for a
66 considered calendar year t shall be based on the following expression, according to Article 153(2d) for all
67 TSOs in SA CE:

$$P_{i,t} = FCR_{dimensioning} \cdot \left(\frac{G_{i,t-2} + L_{i,t-2}}{G_{u,t-2} + L_{u,t-2}} \right)$$

68 With:

- 69 • $P_{i,t}$ being the initial FCR obligation for TSO i for the calendar year t ;
70 • $FCR_{dimensioning}$ being the FCR dimensioning value calculated for synchronous area CE;
71 • $G_{i,t-2}$ being the electricity generated in the control area i (including the electricity production for
72 exchange of reserves and scheduled electricity production from jointly operated units or groups)
73 during the second last calendar year with respect to the considered year t ;
74 • $L_{i,t-2}$ being the electricity consumption in the control area i during the second last calendar year
75 with respect to the considered year t ;
76 • $G_{u,t-2}$ being the total (sum of) electricity production in all control areas of the synchronous area
77 CE during the second last calendar year with respect to the considered year t ;
78 • $L_{u,t-2}$ being the total consumption in all control areas of the synchronous area CE during the
79 second last calendar year with respect to the considered year t .

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81 Every year but not later than March 31th, each TSO of the synchronous area CE shall provide to each other
82 the data regarding the generation and consumption in its control area in the previous calendar year.

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Article 4 Publication and implementation of the FCR dimensioning rules proposal

- 85 1. The TSOs shall publish the FCR dimensioning rules proposal without undue delay after all NRAs have
86 approved the proposal or a decision has been taken by the Agency for the Cooperation of Energy
87 Regulators in accordance with Article 6 (1) and (8) of the SO GL.
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- 89 2. The TSOs shall implement the FCR dimensioning rules proposal provided one month after the
90 regulatory authorities have approved the proposal in accordance with Article 6(3) SO GL or a decision
91 has been taken by the Agency in accordance with Article 6(8) SO GL.

92 **Article 5**
93 **Language**

94 The reference language for this FCR dimensioning rules proposal shall be English. For the avoidance of
95 doubt, where TSOs need to translate this FCR dimensioning rules proposal into their national language(s),
96 in the event of inconsistencies between the English version published by TSOs in accordance with Article 8
97 of the SO GL Regulation and any version in another language, the relevant TSOs shall, in accordance with
98 national legislation, provide the relevant national regulatory authorities with an updated translation of the
99 FCR dimensioning rules proposal.
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Explanatory note for the FCR dimensioning rules proposal

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Explanatory note

- 1 An appropriate amount of FCR available in the synchronous area is essential to stabilize the system
2 frequency at a stationary value after any imbalance between generation and consumption.
- 3 The basic criterion used for FCR dimensioning is to withstand the reference incident in the synchronous
4 area by containing the system frequency within the maximum frequency deviation and stabilizing the
5 system frequency within the maximum steady-state frequency deviation.
- 6 The reference incident is defined as the maximum expected instantaneous power deviation between
7 generation and demand in the synchronous area for which the dynamic behaviour of the system is designed.
8 This expected instantaneous power deviation includes the losses of the largest power generation modules or
9 loads, loss of a line sector or a bus bar, or loss of a HVDC interconnector. The SO GL (Article 153 (2b.i))
10 sets the reference incident for CE to 3000 MW in both directions.
- 11 This criterion assumes a balanced situation when the incident occurs. In order to consider prior imbalances
12 derived from changes in demand, renewable generation or the market-induced imbalances, the
13 dimensioning of FCR capacity can be calculated by combining the probability of forced instantaneous
14 outages with the probability of used FCR due to the already existing frequency deviations (not associated
15 with generation trips).
- 16 The SO GL (Article 153 2(c)) allows the possibility for the synchronous area CE to define and apply a
17 dimensioning approach to calculate the reserve capacity on FCR that must at least cover the reference
18 incident, and based on the principle of covering the imbalances in the synchronous area that are likely to
19 happen once in 20 years. This probabilistic methodology assumes the following starting hypothesis such as
20 full activation time of automatic FRR, tripping rates of the generation plants, patterns of load, generation
21 and inertia (including synthetic inertia), which are difficult to estimate and have a strong influence on the
22 results.
- 23 On the other hand, in the recent past, the FCR capacity dimensioned in CE (equal to the reference incident
24 3000 MW in both directions) has proven to be enough to ensure the conditions for maintaining the
25 frequency quality level and respecting the operational security requirements.
- 26 For all these exposed above, the FCR dimensioning capacity in CE shall be equal to the reference incident
27 for positive and negative directions.
- 28 According to the Article 153(2) of Commission Regulation (EU) 2017/1485 establishing a guideline on
29 electricity transmission system operation, by 12 months after entry into force of this Regulation, all TSOs
30 of a synchronous area shall jointly develop a common proposal regarding the dimensioning rules for FCR,
31 which shall comply with the following requirement:
- 32 • The reserve capacity for FCR required for the synchronous area shall cover at least the reference
33 incident and, for the CE and Nordic synchronous areas, the results of the probabilistic dimensioning
34 approach for FCR carried out pursuant to point (c);
 - 35 • For the CE and Nordic synchronous areas, all TSOs of the synchronous area shall have the right to
36 define a probabilistic dimensioning approach for FCR taking into account the pattern of load, generation
37 and inertia, including synthetic inertia as well as the available means to deploy minimum inertia in real-
38 time in accordance with the methodology referred to in Article 39, with the aim of reducing the
39 probability of insufficient FCR to below or equal to once in 20 years.
- 40 This proposal takes into account all the previous requirements.
- 41 Finally, and according to the Article 6(3) this proposal shall be subject to approval by all regulatory
42 authorities of the synchronous area CE.