

**REQUEST FOR AMENDMENT BY THE REGULATORY  
AUTHORITIES OF THE CONTINENTAL EUROPE  
SYNCHRONOUS AREA**

**OF**

**ALL CONTINENTAL EUROPE TSOs' PROPOSAL FOR  
THE DEFINITION OF A MINIMUM  
ACTIVATION TIME PERIOD REQUIRED FOR FCR  
PROVIDING UNITS OR GROUPS WITH  
LIMITED ENERGY RESERVOIRS TO REMAIN  
AVAILABLE DURING ALERT STATE IN  
ACCORDANCE WITH ARTICLE 156(10) OF THE  
COMMISSION REGULATION (EU)  
2017/1485**

**2 December 2022**

## I. Introduction and legal context

Pursuant to Article 156(10) of SO GL, all the Continental Europe TSOs (hereinafter referred to as: CE TSOs) shall develop a proposal concerning the minimum activation period to be ensured by frequency containment reserves (hereinafter referred to as: FCR) providing units or groups with limited energy reservoirs (hereinafter referred to as: LER) during alert state (hereinafter referred to as: proposal for T<sub>min</sub> LER definition). The proposal shall take full account of the results of the cost-benefit analysis (hereinafter referred to as: CBA) conducted pursuant to Article 156(11) of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on Electricity Transmission System Operation (hereinafter referred to as: SOGL). According to Article 6(3)(d)(v) of SOGL, the CE TSOs' proposal referred to in Article 156(10) of SO GL is subject to approval by all regulatory authorities of the relevant region.

This document constitutes the agreement of the Regulatory Authorities of the Continental Europe synchronous area (hereinafter referred to as: CE NRAs), as voted on 2 December 2022, on the CE TSOs' proposal for T<sub>min</sub> LER definition.

This common paper of the CE NRAs shall provide evidence of an agreement between the CE NRAs. It is intended to constitute the basis on which the CE NRAs will each subsequently issue their national decision based on the conclusions of this document. Moreover, as CE NRAs have come to an agreement on the CE TSOs proposal, there will be no referral of this proposal to ACER pursuant to Article 6(8) of SO GL.

The legal provisions that lie at the basis of the T<sub>min</sub> LER definition, and this CE NRAs agreement on the above-mentioned proposal, are found in Articles 4, 6, 118, 154 and 156 of SOGL and in Article 5 of the Regulation (EU) 2019/942 of the European Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators (hereinafter referred to as: Regulation 2019/942). They are set out here for reference.

### **SOGL**

Article 4 – Objectives and regulatory aspects

*1. This Regulation aims at: (...)*

*(c) determining common load-frequency control processes and control structures;*

*[...]*

Article 6 - Approval of terms and conditions or methodologies of TSOs

*[...]*

*3. The proposals for the following terms and conditions or methodologies shall be subject to approval by all regulatory authorities of the concerned region, on which a Member State may provide an opinion to the concerned regulatory authority: (...)*

*(d) methodologies, conditions and values included in the synchronous area operational agreements in Article 118 concerning: (...)*

*(v) for the CE and Nordic synchronous areas, the minimum activation period to be ensured by FCR providers in accordance with Article 156(10);*

*[...]*

Article 154 - FCR technical minimum requirements

[...]

*2. All TSOs of a synchronous area shall have the right to specify, in the synchronous area operational agreement, common additional properties of the FCR required to ensure operational security in the synchronous area, by means of a set of technical parameters and within the ranges in Article 15(2)(d) of Regulation (EU) 2016/631 and Articles 27 and 28 of Regulation (EU) 2016/1388. Those common additional properties of FCR shall take into account the installed capacity, structure and pattern of consumption and generation of the synchronous area. The TSOs shall apply a transitional period for the introduction of additional properties, defined in consultation with the affected FCR providers.*

[...]

Article 156 – Provisions

[...]

*10. For the CE and Nordic synchronous areas, all TSOs shall develop a proposal concerning the minimum activation period to be ensured by FCR providers. The period determined shall not be greater than 30 or smaller than 15 minutes. The proposal shall take full account of the results of the cost-benefit analysis conducted pursuant to paragraph 11.*

[...]

## **Regulation 2019/942**

Article 5 - Tasks of ACER as regards the development and implementation of network codes and guidelines (R942/2019)

[...]

*3. Where one of the following legal acts provides for the development of proposals for terms and conditions or methodologies for the implementation of network codes and guidelines which require the approval of all the regulatory authorities of the region concerned, those regulatory authorities shall agree unanimously on the common terms and conditions or methodologies to be approved by each of those regulatory authorities:*

- (a) a legislative act of the Union adopted under the ordinary legislative procedure;*
- (b) network codes and guidelines that were adopted before 4 July 2019 and subsequent revisions of those network codes and guidelines; or*
- (c) network codes and guidelines adopted as implementing acts pursuant to Article 5 of Regulation (EU) No 182/2011.*

*Method*

[...]

## **II. The Continental Europe TSOs' proposal**

The T<sub>min</sub> LER definition is one of the terms & conditions and methodologies to be included in the Continental Europe Synchronous Area Operational Agreement in line with Article 118(1)(r) and Article 118(2) of SO GL and subject to NRAs approval according to Article 6(3)(d)(v) of SOGL.

The CE TSOs prepared their proposal for the T<sub>min</sub> LER definition based on the outcome of the CBA referred to in Article 156(11) of SOGL run in accordance with the methodology approved by the CE NRAs based on the agreement reached on 1 March 2019. Pursuant to Article 156(11) of SOGL, the TSOs had to submit their proposal for the T<sub>min</sub> LER definition within one year after the approval of

the CBA assumptions and methodology by the last involved NRAs. Unfortunately, due to some delays in the NRAs process, the CBA approval was completed only on 7 October 2020 when the last NRA issued its national decision, meaning that the proposal for the T<sub>min</sub> LER definition was due by 7 October 2021.

The CE TSOs' proposal suggests a hybrid approach for the T<sub>min</sub> LER definition:

- a) 30 minutes T<sub>min</sub> for all LER qualified for FCR after the end of an interim period of 24 months starting from the date of entry into force of the proposal;
- b) LER already qualified before the end of the interim period shall comply with the maximum between the T<sub>min</sub> legally in force in their connecting area and the T<sub>min</sub> for which they were prequalified; the two values may differ in case a TSO at local level has exploited the faculty given by Article 156(9) of SOGL to define a T<sub>min</sub> value at national level.

Considering the FCR state of play in the CE Synchronous Area, the CE TSOs proposal can be practically translated into:

- a) 30 minutes T<sub>min</sub> for all LER qualified after the interim period;
- b) 15 minutes T<sub>min</sub> for most of the already qualified LER (since they were qualified for 15 minutes T<sub>min</sub> and the connecting TSO has not opted for increasing the T<sub>min</sub>);
- c) a value between 15 and 30 minutes for a few already qualified LER (because either qualified for this value or connected in the control area of a TSO having opted for increasing T<sub>min</sub>).

In other terms, the CE TSOs' proposal aims to preserve the investments already in place, avoiding an expensive retrofitting for the already qualified LERs. However, this proposal may induce some criticalities in the FCR market, because of the cohabitation of LERs with different performances in terms of T<sub>min</sub>. Anyhow the CE TSOs believe that this cohabitation is sustainable both from a technical (FCR performances) and economical (FCR market) point of view.

The proposal also includes a description of its expected impact on the objectives of SOGL, in line with Article 6(6) of SOGL.

### **III. The Regulatory Authorities' position**

#### **On the effectiveness of the CBA for setting the T<sub>min</sub> LER**

The CBA was run considering a statistical dataset for both deterministic frequency deviations (DFDs), with two scenarios, one with full DFDs and the other with mitigated DFDs, and long lasting frequency deviations (LLFDs). The outcomes of the CBA were independent from the mitigation of the deterministic frequency deviations (same results were obtained in both scenarios) while significantly correlated to the extent of the LLFDs. In case of a LLFD, the FCR remains triggered: if the deviation exceeds 50 mHz, the alert state is triggered as well and the LER may be deployed, reducing the amount of FCR available to counter a potential aggravation of the deviation. According to the CBA, the risk may be mitigated by either increasing the overall FCR volume or by prolonging the T<sub>min</sub> for LERs in order to prevent or at least delay their exhaustion. In particular, according to the CBA, with a larger LER share the cheapest solution would be setting a T<sub>min</sub> equal to 30 minutes, since the otherwise associated increase of FCR dimensioning would lead to higher overall costs for the system.

Some NRAs consider that the CBA is a simplified representation and therefore question its effectiveness as the only tool to be used to identify the most effective T<sub>min</sub>. Other NRAs, on the contrary, are fine with the CBA representation and consider its outcome as an efficient starting point for setting the T<sub>min</sub> LER.

## On the link between the LLFDs and the T<sub>min</sub> LER

CE NRAs consider FCR and the T<sub>min</sub> LER related to the task to contain frequency (FCR means Frequency Containment Reserve), while solving the LLFDs pertain more to the task of restoring the frequency (accomplished by FRR and RR). For this reason, the NRAs deem FCR and the T<sub>min</sub> LER being insufficient to cope with LLFDs.

Moreover, NRAs are of the opinion that some LLFDs are caused by miscommunication or other (human) errors (as for example delayed activation or deactivation of mFRR and RR). These should be solved before entering any solution involving balancing reserves. All the remaining LLFDs (usually persisting for more than 30 minutes up to two-three hours) witness the deficiency of the current system to always restore the frequency within the 15 minutes prescribed by SOGL. This aspect should be managed by dedicated resources as FRR (and RR where adopted). Therefore (but also for other reasons), some NRAs consider that if FRR and RR were well dimensioned, T<sub>min</sub> LER should not exceed 15 minutes, since FRR and RR activations should normally suffice to restore the frequency.

Some other NRAs support, instead, a higher T<sub>min</sub> LER up to 30 minutes in order to help preserving the operational security: even if improving the FRR, some deviations may persist and may be aggravated by overlapping additional events. A proper T<sub>min</sub> LER is of utmost importance to cope with such events in an efficient manner as a “first-aid” or “first-level safety net”, giving TSOs more time to react in exceptional events e.g. via activating additional mFRR/RR.

## On the LLFD study

All CE NRAs understand that the T<sub>min</sub> LER is highly correlated with the LLFDs dataset. For this reason, before setting any T<sub>min</sub> value, the CE NRAs deem it of utmost importance to assess the LLFDs roots and to evaluate the measures that could be implemented to reduce their extent.

The CE NRAs thus asked the CE TSOs to run a dedicated study on the historical LLFDs that had occurred in the past years, giving particular attention to the causes behind each event and to potential measures that could be introduced to prevent similar situations in the future.

The study pointed out that most LLFDs are due to lack of proper FRR behaviour, either in terms of low resources available or in terms of insufficient FRR performances. Only a few LLFDs are related to other causes as, for example, data error or mismatched communication. Hence mitigation measures to fight LLFDs other than improving FRR may be effective only in a reduced number of cases.

## On the amendment of the TSOs' proposal

The CE NRAs are not in a position to approve the TSOs' proposal as submitted: the interim period is too short and some provisions on the requalification of the FCR resources need to be included in the proposal, if an expensive retrofitting of existing FCR providing units or groups is to be avoided.

The CE NRAs thus evaluated the possibility to directly amend the TSOs' proposal in order to fix the above-mentioned issues. Nonetheless, while the interim period might be extended (for example to at least 36 months) and while the units whose qualification is renewed after the end of the interim period might be still considered as already qualified units and thus exempted from the new provisions on T<sub>min</sub> LER, agreeing on setting a proper T<sub>min</sub> value was not possible to achieve at this stage.

It is a common opinion of all CE NRAs that FRR behaviour needs to be thoroughly checked: this means both looking at the FRR dimensioning criteria in each LFC block and their effectiveness to cope with 99% of the active power imbalances pursuant to Article 157(2)(i) of SOGL and to the FRR performances in terms of activation times. A similar check would be useful for RR as well.

The FRR and RR checks cannot prescind from the results of the review of the FCR dimensioning criteria that is ongoing at CE SA level with the possibility to adopt a probabilistic approach to manage

the increase of RES production and storage devices expected in the coming years to accommodate the decarbonisation targets. This means that all the hierarchical structure of the frequency regulation needs to be assessed in order to detect potential areas of improvement.

Moreover, the CE SA perimeter has recently changed with the synchronization of Ukraine and Moldova: this represents another key factor to be duly considered while assessing the overall performances of the frequency regulation.

Only once the assessment of the frequency regulation is completed, a concrete decision on a proper T<sub>min</sub> value could be adopted. Until then a decision on this matter might turn to be unproportionate: a longer T<sub>min</sub> LER might result in (economically) inefficient investments in storage devices, should FRR be effectively improved and LLFDs extent successfully mitigated or should the FCR be anyhow increased for other factors than LLFDs; a shorter T<sub>min</sub> LER, on the contrary, might pose the operational security at risk, in case LLFDs or other minor frequency deviations have not been dealt with by other measures (e.g. FRR and RR improvements), LER are deployed and FCR is not increased.

The CE NRAs thus agree to request the CE TSOs to amend the proposal for the T<sub>min</sub> LER definition, after having completed an overall assessment of the frequency regulation in the CE SA. It's worth noticing that according to the current regulatory framework the NRAs have the duty to revise the proposals for terms, conditions and methodology and to amend them where needed: in case a revision or an amendment turns to be infeasible (as in the T<sub>min</sub> LER case due to lacking information), requesting the TSOs to amend the proposal is still a possible outcome as well.

## On the frequency regulation assessment

In order to amend the proposal for the T<sub>min</sub> LER definition, the CE TSOs shall perform a comprehensive study on the hierarchical structure of the frequency regulation in CE SA including at least the following actions:

1. completing the assessment of the FCR dimensioning with a probabilistic assessment;
2. checking the effectiveness of the FRR, and if relevant RR, dimensioning criteria adopted in each LFC block to cope with the requirements in Article 157 SOGL, and if relevant Article 160 SOGL.;
3. checking the effectiveness of the FRR, and if relevant RR, performance criteria (with particular attention to a proper activation and deactivation) adopted in each LFC block to cope with the requirements in Article 142 SOGL, and if relevant Article 143 SOGL.;
4. checking possible improvements in forecast quality;
5. rerunning the CBA with updated information on the FCR costs<sup>1</sup> and with a prospected LLFDs dataset derived by taking into account the improvements the FRR and RR performances and dimensioning criteria, and other mitigating measures regarding other causes of LLFDs such as data errors or mismatched communication.

The CE TSOs shall provide full transparency to the CE NRAs on the methodologies and data used to carry out the comprehensive study mentioned by keeping the CE NRAs informed on a regular (ideally monthly) basis when carrying out the study. Dedicated workshops on interim results would also be much appreciated.

The study shall be completed and sent to CE NRAs along with the amended proposal for the T<sub>min</sub> LER definition and the outcome shall be illustrated to the CE NRAs shortly after.

In the meanwhile, each CE TSO and NRA can adopt all the measures that it deems useful at national level to ensure the operational security of its system. This includes, but is not limited to:

- i. increasing FRR (and RR where applicable) to be procured;

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<sup>1</sup> A new inquiry on the state of play would be much appreciated.

- ii. improving the performance of FRR in line with performance criteria;
- iii. adopting specific products for FRR at national level (e.g. with shorter FRR activation time);
- iv. increasing the FCR to be procured at national level above the quota assigned pursuant to SAFA;
- v. while a harmonized value at CE SA level is pending, setting an interim Tmin LER value between 15 and 30min at national level (requiring NRA approval) or - if no other Tmin was/is set – apply the default value of 15min according to Article 156(9) SOGL.

## IV. Conclusions

The CE NRAs have consulted and closely cooperated and coordinated with each other in order to decide to request the CE TSOs to amend the proposal for Tmin LER definition based on the outcome of a comprehensive study of the hierarchical frequency regulation in CE SA.

### List of actions to be performed by the CE TSOs

- Run the comprehensive study on the frequency regulation in the CE SA with at least the following elements:
  - complete the assessment of the FCR dimensioning with a probabilistic assessment;
  - check the effectiveness of the FRR, and if relevant RR, dimensioning criteria adopted in each LFC block to cope with the requirements in Article 157 SOGL, and if relevant Article 160 SOGL;
  - check the effectiveness of the FRR, and if relevant RR, performance criteria (with particular attention to a proper activation and deactivation) adopted in each LFC block to cope with the requirements in Article 142 SOGL, and if relevant Article 143 SOGL;
  - check possible improvements in forecast quality;
  - re-run the CBA with updated information on the FCR costs<sup>2</sup> and with a prospected LLFDs dataset derived by taking into account the improvements the FRR and RR performances and dimensioning criteria, and other mitigating measures regarding other causes of LLFDs such as data errors or mismatched communication;
- Amend the proposal for Tmin LER definition based on the outcome of the study.

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<sup>2</sup> A new inquiry on the state of play would be much appreciated.