

**REQUEST FOR AMENDMENT BY REGULATORY
AUTHORITIES**

ON

**ALL CONTINENTAL EUROPE AND NORDIC TSOS'
PROPOSAL FOR A COST BENEFIT ANALYSIS
METHODOLOGY IN ACCORDANCE WITH ARTICLE
156(11) OF THE COMMISSION REGULATION (EU)
2017/1485 OF 2 AUGUST 2017 ESTABLISHING A
GUIDELINE ON ELECTRICITY TRANSMISSION SYSTEM
OPERATION**

30 July 2018

I. Introduction and legal context

This document elaborates an agreement of the Regulatory Authorities of Nordic and Continental Europe synchronous areas (hereinafter: Regulatory Authorities), agreed on 30 July 2018 on the Nordic and Continental Europe TSOs' proposal for a Cost Benefit Analysis Methodology (hereinafter: CBA) in accordance with Article 156(11) of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on Electricity Transmission System Operation (hereinafter: SO GL).

This agreement of the Regulatory Authorities shall provide evidence that a decision on the CBA does not, at this stage, need to be adopted by ACER pursuant to Article 6(8) of SO GL. It is intended to constitute the basis on which the Regulatory Authorities will each subsequently request an amendment to the CBA pursuant to Article 7 of SO GL.

The legal provisions that lie at the basis of the CBA, and this Regulatory Authorities agreement on the above mentioned methodology, can be found in Articles 4 and 156 of SO GL. They are set out here for reference.

Article 4 – Objectives and regulatory aspects

- 1 *This Regulation aims at:*
 - (a) *determining common operational security requirements and principles;*
 - (b) *determining common interconnected system operational planning principles;*
 - (c) *determining common load-frequency control processes and control structures;*
 - (d) *ensuring the conditions for maintaining operational security throughout the Union;*
 - (e) *ensuring the conditions for maintaining a frequency quality level of all synchronous areas throughout the Union;*
 - (f) *promoting the coordination of system operation and operational planning;*
 - (g) *ensuring and enhancing the transparency and reliability of information on transmission system operation;*
 - (h) *contributing to the efficient operation and development of the electricity transmission system and electricity sector in the Union.*
- 2 *When applying this Regulation, Member States, competent authorities, and system operators shall:*
 - (a) (...)
 - (b) (...);
 - (c) *apply the principle of optimisation between the highest overall efficiency and lowest total costs for all parties involved*

[...]

Article 156 – FCR provision

[...]

7. *An FCR providing unit or FCR providing group with an energy reservoir that does not limit its capability to provide FCR shall activate its FCR for as long as the frequency deviation persists.)(...).*
8. *A FCR providing unit or FCR providing group with an energy reservoir that limits its capability to provide FCR shall activate its FCR for as long as the frequency deviation persists, unless its energy reservoir is exhausted in either the positive or negative direction. (...)*
9. *For the CE and Nordic synchronous areas, each FCR provider shall ensure that the FCR from its FCR providing units or groups with limited energy reservoirs are continuously available during normal state. For the CE and Nordic synchronous areas, as of triggering the alert state and during the alert state, each FCR provider shall ensure that its FCR providing units or*

groups with limited energy reservoirs are able to fully activate FCR continuously for a time period to be defined pursuant to paragraphs 10 and 11. Where no period has been determined pursuant to paragraphs 10 and 11, each FCR provider shall ensure that its FCR providing units or groups with limited energy reservoirs are able to fully activate FCR continuously for at least 15 minutes or, in case of frequency deviations that are smaller than a frequency deviation requiring full FCR activation, for an equivalent length of time, or for a period defined by each TSO, which shall not be greater than 30 or smaller than 15 minutes.

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.
11. By 6 months after entry into force of this regulation, the TSOs of the CE and Nordic synchronous areas shall propose assumptions and methodology for a cost-benefit analysis to be conducted, in order to assess the time period required for FCR providing units or groups with limited energy reservoirs to remain available during alert state. By 12 months after approval of the assumptions and methodology by all regulatory authorities of the concerned region, the TSOs of the CE and Nordic synchronous areas shall submit the results of their cost-benefit analysis to the concerned regulatory authorities, suggesting a time period which shall not be greater than 30 or smaller than 15 minutes. The cost-benefit analysis shall take into account at least:
 - (a) experiences gathered with different timeframes and shares of emerging technologies in different LFC blocks;
 - (b) the impact of a defined time period on the total cost of FCR reserves in the synchronous area;
 - (c) the impact of a defined time period on system stability risks, in particular through prolonged or repeated frequency events;
 - (d) the impact on system stability risks and total cost of FCR in case of increasing total volume of FCR;
 - (e) the impact of technological developments on costs of availability periods for FCR from its FCR providing units or groups with limited energy reservoirs.
12. The FCR provider shall specify the limitations of the energy reservoir of its FCR providing units or FCR providing groups in the prequalification process in accordance with Article 155.
13. A FCR provider using FCR providing units or FCR providing group with an energy reservoir that limits their capability to provide FCR shall ensure the recovery of the energy reservoirs in the positive or negative directions in accordance with the following criteria:
 - (a) (...)
 - (b) for the CE and Nordic synchronous areas, the FCR provider shall ensure the recovery of the energy reservoirs as soon as possible, within 2 hours after the end of the alert state.

II. The Nordic and Continental Europe TSOs' proposal

The CBA was consulted by the Nordic and Continental Europe TSOs through ENTSO-E for one month from 10 January 2018 to 18 February 2018, in line with Article 11 of SO GL¹. The final CBA was received by the last Regulatory Authority of the Nordic and Continental Europe synchronous

¹ The public consultation is available on the ENTSO-e website: <https://consultations.entsoe.eu/system-operations/cbam/>

areas on 18 April 2018. The proposal includes proposed timescales for its implementation and a description of its expected impact on the objectives of SO GL, in line with Article 6(6) of SO GL.

Article 6(7) of SO GL requires the Regulatory Authorities to consult and closely cooperate and coordinate with each other in order to reach an agreement, and make decisions within six months following receipt of submissions of the last Regulatory Authority concerned. A decision is therefore required by each Regulatory Authority by 18 October 2018.

The CBA aims to set the minimum delivery period in the alert state for the FCR production units with low energy reservoirs (hereinafter: LER).

Different combinations of LER share (from 10% to 100% with a 10% step) and delivery period (15 min, 20 min, 25 min and 30 min) are explored and the best solution is selected by estimating the overall FCR cost and the acceptability of each combination against the most relevant real historical frequency events.

FCR cost is assessed by the mean of a probabilistic simulation model, based on a Monte Carlo approach, with three different input data:

- a) deterministic frequency deviations
- b) long lasting frequency deviations
- c) outages.

All the available information related to the dependence amongst the three input data listed above are taken into account in order to avoid the double counting phenomena.

FCR cost is computed based on the market experience for non LER FCR units, looking at energy price and marginal production cost; for existing LER OPEX and opportunity costs are considered, while for new LER (new investments) also the investment cost is taken into account where sustained explicitly to qualify for FCR provision.

The acceptability against the most relevant frequency events is evaluated with a dedicated process, by testing the system with LER with the same frequency trend occurred in the considered events: the goal is to evaluate whether the presence of LER would have been sustainable or whether it would have caused worse conditions. In particular for Continental Europe Italian blackout on 28 September 2003 and European blackout on 4 November 2006 are considered.

The delivery period will be proposed by 12 months after the approval of the CBA: the selected period will contain the FCR cost, without jeopardizing system security.

III. The Regulatory Authorities' position

General comments

Regulatory Authorities appreciate the effort by the TSOs to clarify most of the issues posed by the Regulatory Authorities in their shadow opinion.

From general point of view Regulatory Authorities are fine with the proposal: all the provisions listed in Article 156(11) of SO GL are matched and the TSOs in particular clarify the interdependencies between the different input data and the different costs taken into account to build the LER cost curve.

As far the implementation is concerned, Article 9 of the CBA states that: *"In any case following any significant change of the assumptions for the cost benefit analysis after entering into force of the Time Period, all TSOs of the CE and Nordic synchronous areas shall submit the results of an updated cost-benefit analysis to the concerned regulatory authorities, suggesting an updated time period which shall not be greater than 30 or smaller than 15 minutes"*. Regulatory Authorities clarify that the CBA may need to be rerun either because input parameters (e.g LER share, outages) change or because new assumptions are made to take into account the new scenario.

In the first case (new input parameters), the TSO may relaunch the original CBA with the new parameters, in order to define the new delivery time period for alert state. This new period should be subject to regulatory approval.

On the contrary, any change of the assumptions shall lead to an amended CBA proposal according to Article 7(4) of SO GL. Once this new CBA is approved, Nordic and Continental Europe TSOs will be allowed to propose a new time period pursuant to the new proposal.

Nordic and Continental Europe TSOs are asked to amend Article 9 accordingly, to take into account the above mentioned remarks.

There is also another concern already posed in the shadow opinion that has not been fully addressed. The CBA will be run separately for Nordic and Continental Europe synchronous areas: theoretically two different delivery periods may be set; Nordic and Continental Europe TSOs are asked to evaluate the impact of different delivery periods on European market integration.

Deterministic frequency deviations

The TSOs proposed to base the CBA on all the deterministic frequency deviations, independent on the implementation of proper mitigation measures pursuant to Article 138 of SO GL.

The Regulatory Authorities are aware that proper mitigation measures have been discussed for years and that no agreement has been achieved yet at TSO's level; nevertheless the Regulatory Authorities intend to stimulate the TSOs to implement such measures in due time, avoiding to continue postponing the relevant decision on that.

For this reason they intend to ask the TSOs to run the CBA taking into account two different scenarios:

- a) scenario A including all the deterministic frequency deviations, as originally proposed by the TSOs;
- b) scenario B with deterministic frequency deviations partially filtered to take into account the application of the mitigation measures.

The goal of the two simulations is to understand the impact (in term of estimated cost for FCR and in term of delivery time period in alert state) of the delay in the implementation of the mitigation measures.

The TSOs are thus asked to amend the proposal accordingly, by including a proper filtering for deterministic frequency deviations for Scenario B and by clarifying that a double simulation shall be provided.

Interaction with synchronous area agreement

Some assumptions adopted for the CBA are based on specific requirements included in the synchronous area agreement that will be submitted to the Regulatory Authorities in September 2018. The TSOs are asked to include in the CBA a proper reference to such agreement: in this way any change to the requirements included in this agreement will be automatically taken into account on the CBA. This is an example of change in input parameters: in this case, thus, the TSOs may rerun the CBA to take into account the new requirements, without submitting the amended proposal to the Regulatory Authorities.

Specific remarks

A list of the TSOs submitting the proposal shall be added, since this is not an all TSOs proposal at European level, but it regards only Continental Europe and Nordic synchronous area.

Article 1 of the CBA shall include a proper reference to Article 4(2)(c) of SO GL that refers to the principle of optimisation between the highest overall efficiency and lowest total costs for all parties involved: this principle, in fact, rules the entire CBA.

The definition of LER in Article 2 of the CBA is not exhaustive: some clarifications about the different technologies shall be given, in the methodology or, at least, in the explanatory document, along with some examples; this aspect was also addressed by some stakeholders during the public consultation.

The length of the long system operation period in Article 4(5) shall be defined.

Article 5(2) states that "The FCR cost for non-LER FCR providers shall be calculated at least by comparing the marginal cost of the FCR provider with the energy marginal price of the bidding zone". The TSOs are asked to clarify which is the timeframe (day-ahead, intraday, balancing) relevant to identify such energy marginal price.

Article 5(2) refers also to the cost of future installed LER. The TSOs are asked to clarify the relevant timeframe for future installed LER. For Regulatory Authorities taking into account installations in too far timeframes may be out of scope.

More clarifications about the impact of the annual review of the K-factor pursuant to Article 156(2) of SO GL on the CBA results and why all cross borders LFC processes are neglected would be much welcomed.

There are some typos that should be corrected:

- in Article 2(1) definitions in Article 3 of Regulation 714/2009 and Directive 2009/72 are mentioned: indeed these definitions are included in Article 2 of such documents;
- Article 7 is followed by Article 9;

Finally Article 11 shall be deleted: it refers to the explanatory note document that is not subject to approval.

IV. Conclusions

The Regulatory Authorities have consulted and closely cooperated and coordinated to reach agreement that **they request an amendment to the CBA submitted by Nordic and Continental Europe TSOs pursuant to Article 156(11) of SO GL**. The amended proposal should take into account the Regulatory Authorities position stated above, and should be submitted by TSOs no later than 2 months after the last national decision to request an amendment has been made, in accordance with Article 7(1) of SO GL.

The Regulatory Authorities must make their national decisions to request an amendment to the capacity calculation methodology, on the basis of this agreement, by 15 August 2018.

List of action points

- Amend Article 9 to take into account that a new CBA shall be submitted following any change in the assumptions;
- Elaborate on the description of current experiences with LER;
- Evaluate the impact on European market integration in case different delivery periods are set in Nordic and Continental Europe synchronous areas pursuant to the CBA results;
- Include the list of the TSOs submitting the proposal
- Amend article 1, by adding a reference to Article 4(2)(c) of SO GL;
- Amend LER definition in Article 2 giving more details on different technologies; as an alternative the details may be given in the explanatory document;
- Define the length of the long system operation period in Article 4(5);
- Define the timeframe relevant for the energy marginal price in Article 5(2);

- Define what it is intended with future installed LER in Article 5(2);
- Clarify the impact of the annual review of the K-factor on the CBA and why all cross borders LFC processes are neglected;
- Correct the typos;
- Delete article 11.