All TSOs' proposal for the implementation framework for a European platform for the imbalance netting process in accordance with Article 22 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing

18 June 2018

Contents

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

All TSOs, taking into account the following:

Whereas

(1) This document is a common proposal developed by all Transmission System Operators (hereafter referred to as "TSOs") regarding a proposal for the implementation framework for a European platform for the imbalance netting process (European platform for the imbalance netting process hereafter referred to as "IN-Platform") in accordance with Article 22 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (hereafter referred to as the "EBGL"). This proposal is hereafter referred to as the "INIF".

(2) The INIF takes into account the general principles, goals and other methodologies set in the EBGL. The goal of the EBGL is the integration of balancing energy markets. The integration of balancing energy markets should be facilitated with the establishment of common European platforms for operating the imbalance netting process and enabling the exchange of balancing energy from frequency restoration reserves and replacement reserves. Cooperation between TSOs should be strictly limited to what is necessary for the efficient and secure design, implementation and operation of those European platforms.

(3) The INIF lays down the design, functional requirements, governance and cost sharing for the IN-Platform. In addition, the INIF contains the proposal for the entity to perform the functions of the IN-Platform. The IN-Platform shall be able to perform the imbalance netting process function as well as the TSO-TSO settlement function as described in the Article 22 of the EBGL.

(4) The INIF takes note of the provisions listed in the recitals (5) to (8).

(5) Article 3(128) of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as the "SOGL") defines the imbalance netting process as "a process agreed between TSOs that allows avoiding the simultaneous activation of FRR in opposite directions, taking into account the respective FRCEs as well as the activated FRR and by correcting the input of the involved FRPs accordingly".

(6) Article 146(9) of the SOGL specifies further, where an LFC block consists of more than one LFC area and the reserve capacity on FRR as well as the reserve capacity on RR is calculated based on the LFC block imbalances, all TSOs of the same LFC block shall implement an imbalance netting process and interchange the maximum amount of imbalance netting power defined in Article 146(6) of the SOGL with other LFC areas of the same LFC block.

(7) Article 146(10) of the SOGL details that, where an imbalance netting process is implemented for LFC areas of different synchronous areas, all TSOs shall interchange the maximum amount of imbalance netting power defined in Article 146(6) of the SOGL with other TSOs of the same synchronous area participating in that imbalance netting process.

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

(8) Additional relevant references to the IN-Platform within the EBGL are listed below:

(a) Article 18(3)(b):

(3) When developing proposals for terms and conditions for balancing service providers and balance responsible parties, each TSO shall:

(b) respect the frameworks for the establishment of European platforms for the exchange of balancing energy and for the imbalance netting process pursuant to Articles 19, 20, 21 and 22;

(b) Article 23:

(1) All TSOs shall provide a yearly report to the relevant regulatory authorities in accordance with Article 37 of Directive 2009/72/EC in which the costs of establishing, amending and operating the European platforms pursuant to Articles 19, 20, 21 and 22 are explained in detail. This report shall be published by the Agency taking due account of sensitive commercial information.

(2) The costs referred to in paragraph 1 shall be broken down into:

(a) common costs resulting from coordinated activities of all TSOs participating in the respective platforms;

(b) regional costs resulting from activities of several but not all TSOs participating in the respective platforms;

(c) national costs resulting from activities of the TSOs in that Member State participating in the respective platforms.

(3) Common costs referred to in paragraph 2(a) shall be shared among the TSOs in the Member States and third countries participating in the European platforms. To calculate the amount to be paid by the TSOs in each Member State and, if applicable, third country, one eighth of the common cost shall be divided equally between each Member State and third country, five eighths shall be divided between each Member State and third country proportionally to their consumption, and two eighths shall be divided equally between the participating TSOs pursuant to paragraph 2(a). The Member State's share of the costs shall be borne by the TSO or TSOs operating in a territory of that Member State. In case several TSOs are operating in a Member State, the Member State's share of the costs shall be distributed among those TSOs proportionally to the consumption in the TSOs control areas.

(4) To take into account changes in the common costs or changes in the participating TSOs, the calculation of common costs shall be regularly adapted.

(5) TSOs cooperating in a certain region shall jointly agree on a proposal for the sharing of regional costs in accordance with paragraph 2(b). The proposal shall then be individually approved by the relevant regulatory authorities of each of the Member States and, if applicable, third country in the region. TSOs cooperating in a certain region may alternatively use the cost sharing arrangements set out in paragraph 3.

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

(6) The cost sharing principles shall apply to costs contributing to the establishing, amending and operating the European platforms from the approval of the proposal for the relevant implementation frameworks pursuant to Articles 19(1), 20(1), 21(1) and 22(1). In case the implementation frameworks propose that existing projects shall evolve into a European platform, the participating TSOs may propose that a share of the costs incurred before the approval of the proposal for the implementation frameworks directly related to the development and implementation of this project and assessed as reasonable, efficient and proportionate is considered as part of the common costs pursuant to paragraph 2(a).

(c) Article 37(1):

(1) After the intraday cross-zonal gate closure time, TSOs shall continuously update the availability of cross-zonal capacity for the exchange of balancing energy or for operating the imbalance netting process. Cross-zonal capacity shall be updated every time a portion of cross-zonal capacity has been used or when cross-zonal capacity has been recalculated.

(d) Article 58(2) and 58(4):

(2) In the proposal pursuant to Article 22, all TSOs shall develop an algorithm to be operated by the imbalance netting process function. This algorithm shall minimise the counter-activation of balancing resources by performing the imbalance netting process pursuant to Part IV of SOGL.

(4) All algorithms developed in accordance with this Article shall:

(a) respect operational security constraints;

(b) take into account technical and network constraints;

(c) if applicable, take into account the available cross-zonal capacity.

(9) The INIF contains the deliverables pursuant to Articles 22(1) and 22(3) of the EBGL and it is developed pursuant to principles of Articles 18(3)(b), 23, 37(1), 58(2) and 58(4) of the EBGL.

(10) Article 5(5) of the EBGL requires that the INIF includes a proposed timescale for its implementation and a description of its expected impact on the objectives of the EBGL. The expected impact is described in paragraphs 11, 12, 13, 14, 15, 16 and 17. The proposed timescale is included in Article 4.

(11) The INIF contributes to the objective of non-discrimination and transparency in balancing markets pursuant to Articles (2)(a), 2(b) and 3(1)(a) of the EBGL, since the same rules and methodologies will apply to all TSOs and LFC areas and, by this, minimise the counter-activation of balancing resources for all market participants in a non-discriminatory way. All TSOs have the same right to form one optimisation region, ensuring non-discrimination. In the last layer of the imbalance netting process, the netting volume will be distributed proportionally to the individual aFRR demands of the LFC areas and, by this, the proportionality is ensured as stated in Article 11 of this proposal. All TSOs will have access to the same reliable information on netted volumes at the same time and in a transparent way. All market participants will have access to the same reliable information on netted volumes.

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

(12) The INIF contributes to the objective of enhancing efficiency of balancing as well as efficiency of European and national balancing markets pursuant to Articles (2)(c) and 3(1)(b) of the EBGL by implementing the imbalance netting process. The proposed imbalance netting process reduces the overall volume of activated balancing reserves in Europe and the national balancing markets. The maximum potential netting volume and, by this, the efficiency of the European and national balancing markets, is ensured by usage of an optimisation algorithm which considers all available cross-zonal capacity making optimal usage of the available cross-zonal capacities as stated in Articles 3 and 11 of this proposal.

(13) The INIF contributes to the objective of integrating balancing markets pursuant to Article 3(1)(c) of the EBGL by implementation of the European platform for the imbalance netting process to be used by all TSOs performing the automatic frequency restoration process, at least for the Continental Europe synchronous area as stated in Article 1 and 3 of this proposal.

(14) The INIF contributes to the objective of contributing to operational security pursuant to Article (2)(d), 2(f) and 3(1)(c) of the EBGL since using the available cross-zonal capacity enables, according to the proposed principles of the algorithm, to minimise the counter-activation of balancing resources and, in consequence, to increase the availability of balancing resources for activation in real-time. Moreover, the proposed congestion management methodologies have proved their effectiveness in operation. The fulfilment of these objectives are detailed in the Articles 3 and 11 of this proposal.

(15) The INIF contributes to the objective of facilitating the efficient and consistent functioning balancing markets pursuant to Article 3(1)(d) of the EBGL by specifying how the imbalance netting process is interacting with, and is integrated to, each LFC area's LFC controller in a consistent manner in order to minimise the counter-activation of balancing resources and increase the available balancing resources for all participating TSOs to the imbalance netting process stated in Article 11.

(16) The INIF serves the requirement of Article 3(2)(e) of the EBGL since only available cross-zonal capacity after the previous market timeframes is used for imbalance netting and, by this, it is ensured that the development of the forward, day-ahead and intraday electricity markets is not compromised, while the availability of cross-zonal capacity for operating the imbalance netting process shall be continuously updated by TSOs. The principles of determination cross-zonal capacity listed in Article 3(5) of this proposal are designed to ensure that the development of the forward, day-ahead and intraday markets is not compromised.

(17) The INIF serves the requirement of Article 3(2)(h) of the EBGL since the technical framework proposed is based on agreed European standards, which are already in operation. The technical framework stated in Article 11 takes into consideration agreed European standards and technical specifications, including specifications of the SOGL and the Continental Europe Operation Handbook.

(18) In conclusion, the INIF contributes to the general objectives of the EBGL.

(19) For clarification:

(a) 'IGCC' means International Grid Control Cooperation and is the implementation project for the IN-platform. The IGCC will evolve into the IN-Platform.

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

(b) All TSOs agree that the existing project IGCC is the implementation project which will serve as basis for development of the IN-Platform.

(c) All member TSOs agree that they shall implement all necessary adaptions to the functionalities of IGCC in accordance with the INIF no later than eleven months after the approval of the INIF.

Abbreviations

List of abbreviations used in this INIF is following:

- aFRR: frequency restoration reserves with automatic activation
- aFRR-Platform: European platform for the exchange of balancing energy from frequency restoration reserves with automatic activation
- CE: continental Europe
- CZC: cross-zonal capacity
- EBGL: guideline on electricity balancing
- EG: expert group
- ENTSO-E: European Network of Transmission System Operators for Electricity
- EU: European Union
- FRCE: frequency restoration control error
- FRR: frequency restoration reserves
- HVDC: high-voltage direct current
- IGCC: International Grid Control Cooperation
- INIF: proposal for the implementation framework for a European platform for the imbalance netting process
- IN-Platform: European platform for the imbalance netting process
- LFC: load-frequency control
- MW: megawatt
- RR: replacement reserves
- SC: steering committee
- SOGL: guideline on electricity transmission system operation
- TSO: transmission system operator

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

SUBMIT THE FOLLOWING IMPLEMENTATION FRAMEWORK TO ALL NATIONAL REGULATORY AUTHORITIES:

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

Article 1
Subject matter and scope

(1) The IN-Platform as determined in this INIF is the common proposal of all TSOs in accordance with Article 22(1) of the EBGL.

(2) The implementation of the IN-Platform is mandatory for all TSOs joining the IN-Platform. The usage of the IN-Platform is mandatory for at least all TSOs of the synchronous area CE performing the automatic frequency restoration process. However, where an LFC area consists of more than one monitoring area, only the TSO appointed in the LFC area operational agreement as responsible for the implementation and operation of the automatic frequency restoration process according to Article 143(4) of the SOGL shall use the IN-Platform.

(3) The implementation of the IN-Platform is not mandatory for all TSOs of the synchronous areas IE/NI, GB and Baltic as long as they do not perform the automatic frequency restoration process in accordance with Article 145 of the SOGL.

(4) This proposal applies solely to the European platform for the imbalance netting process in accordance with Article 146 of the SOGL. The European platforms for frequency restoration reserves processes and replacement reserves process are out of the scope of this proposal.

(5) The proposal for the pricing of balancing energy and cross-zonal capacity used for exchange of balancing energy or for operating the imbalance netting process pursuant to Article 30 of the EBGL is out of the scope of this document and will be treated in a separate document.

(6) The proposal for TSO-TSO settlement rules applicable to the imbalance netting process pursuant to Article 50 of the EBGL is out of the scope of this document and will be treated in a separate document.

Article 2
Definitions and interpretation

(1) For the purposes of the INIF, the terms used shall have the definition given to them in Article 2 of the EBGL, Article 3 of the SOGL and Article 2 of Commission Regulation (EU) 2015/1222.

(2) In addition, in this INIF the following terms shall apply:

(a) 'aFRR demand' means a TSO inelastic demand for activation of standard aFRR balancing energy product bids in order to comply with the objective of Article 143(1)(a) of the SOGL, which needs to be satisfied irrespectively to the standard aFRR balancing energy product bid prices;

(b) 'border' means a set of physical transmission lines linking adjacent LFC areas;

(c) 'correction' or 'P_{corr}' means the amount of power exchange of the participating TSO with other participating TSOs in MW. The correction value is treated as "an agreed upon active power flow" in the sense of the virtual tie-line defined in the SOGL between participating TSOs;

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

(d) 'expert group' or 'EG' means the body including nominated experts of all member TSOs of the IN-Platform;

(e) 'implementation of the platform' means implementing all necessary IT systems in order to operate the imbalance netting process. If the platform is implemented by the entity designated to operate the IN-Platform, the platform is formally implemented for all TSOs;

(f) 'IN-Platform settlement entity' means an EU TSO or an entity formed by EU TSOs which operates the TSO-TSO settlement function of the IN-Platform;

(g) 'member TSO' means any TSO which has joined the IN-Platform, including TSOs from multi-TSO LFC areas from different member states or third countries that are not appointed via their LFC area operational agreement to be responsible for implementing and operating the automatic frequency restoration process pursuant to Part IV of the SOGL, and in particular Articles 141 and 143;

(h) 'optimisation region' means a geographical area of several participating TSOs smaller than the geographical area of all participating TSOs for the purpose of imbalance netting or the exchange of balancing energy from aFRR and, by this, implicit netting between two or more LFC blocks participating in the IN-Platform;

(i) 'participating TSO' means any member TSO which uses the IN-Platform in order to operate the imbalance netting process for intended exchange of balancing energy. By twelve months after the approval of INIF, all member TSOs shall be participating TSOs, except TSOs from multi-TSO LFC areas from different member states or third countries that are not appointed via their LFC area operational agreement to be responsible for implementing and operating the automatic frequency restoration process pursuant to Part IV of the SOGL, and in particular Articles 141 and 143. This is without prejudice to derogation in accordance to Article 62(a) from the EBGL;

(j) 'real-time entity' means an EU TSO or an entity formed by EU TSOs which operates the imbalance netting process function;

(k) 'real-time optimisation cycle' means the time in which the imbalance netting process function calculates a new correction as a result;

(l) 'steering committee' or 'SC' means the decision-making body of the IN-Platform including nominated representatives of all member TSOs and is the superior body to the expert group;

(m) 'TSOs exchanging balancing energy from aFRR' means two or more LFC areas or LFC blocks with a common activation of balancing energy from aFRR where the activation of balancing energy from aFRR follows the principle of a common merit order;

(n) 'usage of the platform' means exchanging energy via the IN-Platform in order to operate the imbalance netting process.

(3) In this INIF, unless the context requires otherwise:

(a) the singular indicates the plural and vice versa;

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

(b) the table of contents and headings are inserted for convenience only and do not affect the interpretation of INIF;

(c) any reference to legislation, regulations, directives, orders, instruments, codes or any other enactment shall include any modification, extension or re-enactment of it when in force.

Article 3
High-level design of the IN-Platform

(1) This INIF introduces the European platform for the imbalance netting process agreed and proposed by all TSOs to be made operational by all TSOs performing the automatic frequency restoration process pursuant to Part IV of the SOGL that will minimise the simultaneous counter-activation of aFRR.

(2) The European platform for imbalance netting process includes all LFC areas of the participating TSOs according to Article 146 of the SOGL and the borders between these LFC areas.

(3) The IN-Platform shall consist of the imbalance netting process function and the TSO-TSO settlement function.

(4) Inputs to the imbalance netting process function are, at least:

(a) the aFRR demand of every LFC area of each participating TSO being continuously reported to the IN-Platform by each participating TSO;

(b) the CZC for concerned borders being continuously reported to the IN-Platform ;

(c) the operational security constraints provided by the participating TSOs or affected TSOs in accordance with Article 150 of the SOGL, where applicable.

(5) The CZC on borders shall be determined as follows:

(a) The available CZC is updated in accordance with Article 37 of the EBGL. The automatic frequency restoration power exchange on bidding zone borders must not exceed the CZC updated in accordance with Article 37 of the EBGL. Bidding zone borders inside an LFC area, scheduling area borders and the respective CZC limitations shall not be explicitly considered by the optimisation algorithm.

(b) If a border between two LFC areas does not match with a bidding zone border according to Regulation (EC) 2015/1222 establishing a guideline on capacity allocation and congestion management ("CACM") and hence, no CZC between the respective LFC areas is defined, the available CZC on this border is considered equal to the respective technical IT limitation agreed by all member TSOs as long as no affected TSO requests an operational limitation in accordance with Article 150(3) of the SOGL.

(c) The available CZC used by the optimisation algorithm as constraint must not exceed additional limitations requested by affected TSOs in accordance with Article 150 of the SOGL.

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

(d) The affected TSOs shall publish the request for additional limitations no later than 30 minutes after the end of the relevant validity period in which the additional limitations have been requested. In the context of the INIF, the validity period is 15 minutes.

(e) The affected TSOs shall provide the justification for the additional limitation on request to all participating TSOs.

(f) All participating TSO are considered as affected TSOs.

(6) All borders between participating TSOs shall be included with their CZC in the imbalance netting process. However, the CZC of borders where one or more transmission lines linking the adjacent LFC areas are high-voltage direct current ("HVDC") systems can be permanently limited based on technical reasons. The limitation may disable any exchange on this border when the border is constituted only of high-voltage direct current systems. The limitation of such a border is allowed when duly justified jointly by the two TSOs concerned by this border. The concerned NRAs shall be notified of this limitation. The technical justification shall be published by the concerned TSOs.

(7) The imbalance netting process function calculates as output, in each real-time optimisation cycle, at least the following values which are continuously reported to each participating TSO by the IN-Platform:

(a) a correction to be used in the load-frequency control of each LFC area of each participating TSO. The correction shall be calculated by the algorithm applied for operating the imbalance netting process. The correction is the intended exchange of energy for the respective real-time optimisation cycle;

(b) the used CZCs.

(8) The implementation of the process shall be based on the communication of the load-frequency control of each participating TSO with the imbalance netting process function which enables real-time balancing of the instantaneously occurring active power imbalances.

(9) Inputs to the TSO-TSO settlement function are, at least:

(a) the intended exchange of energy from the imbalance netting process of each LFC area;

(b) the prices required by the common settlement rules defined by the proposal for common settlement rules according to Article 50(1) of the EBGL.

(10) Outputs of the TSO-TSO settlement function are, at least:

(a) the settlement volume of energy;

(b) the settlement prices;

(c) the settlement amounts.

(11) The netted volumes will be published as soon as possible and not later than 30 min after the relevant market time unit.

(12) The IN-Platform has a two-level governance structure, SC as the decision-making body of the IN-Platform and EG as the expert body of the IN-Platform.

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

Article 4
Implementation of the IN-Platform

(1) By twelve months after the approval of the INIF, the IN-Platform shall fulfill every requirement defined in this INIF and further requirements according to Articles 30 and 50 of the EBGL.

(2) The following steps and timeline shall be used as the roadmap for the implementation of the IN-Platform:

(a) Designation of entity: all TSOs shall designate the entity responsible for operating the function of the IN-Platform within 6 months after approval of the INIF.

(b) Development and adaptation: Development and adaptation shall start at the latest by the approval of the INIF. The implementation of any necessary adaption shall be completed for the imbalance netting process function and for the TSO-TSO settlement function not later than eleven months after the approval of the INIF.

(c) Testing: the entity operating the imbalance netting process function and the TSO-TSO settlement function, and every member TSO liable to introduce adaptions pursuant to paragraph 2(b), shall test the functions of the IN-Platform during the implementation of such adaptions. The testing shall be successfully finished by eleven months after the approval of the INIF.

(d) Go-live: after testing is successfully completed, all member TSOs shall make the IN-Platform operational at the latest by one year after the approval of the INIF.

(e) National implementation: all member TSOs shall complete the implementation of the necessary changes for the participating TSOs and affected TSOs at the latest by eleven months after the approval of the INIF. Every member TSO shall complete and succeed with any necessary technical and operational implementation by eleven months after the approval of the INIF.

(f) Accession to IN-Platform: According to the Article 22(5) of the EBGL, all TSOs performing the automatic frequency restoration process, at least in the Continental Europe synchronous area, shall use the IN-Platform at the latest twelve months after the approval of the INIF. Accession process includes at least national implementation of technical and operational requirements and successful individual testing.

(3) TSOs shall consult stakeholders with any amendments to this INIF after approval of the INIF pursuant to Article 6(3) and Article 10 of the EBGL.

Article 5
Functions of the IN-Platform

(1) The IN-Platform shall consist of the imbalance netting process function and the TSO-TSO settlement function. If deemed efficient when implementing the methodology for CZC calculation within the balancing timeframe in accordance with Article 37(3) of the EBGL, a CZC determination function may be added.

(2) The operation of the IN-Platform by using the multilateral TSO-TSO model as described in the

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

INIF among the participating TSOs shall in principle result in:

(a) lowering the amount of activated balancing resources from automatic frequency restoration process;

(b) strengthening security of supply;

(c) reduction of TSO costs due to enhancing efficiency of balancing by lowering the amount of activated balancing energy resources.

(3) The purpose of the imbalance netting process function shall be the following:

(a) the assignment of imbalance netting potential among participating TSOs in each real-time optimisation cycle is based upon the principles of proportional distribution, where the imbalance netting potential is based on the ratio of a participating TSO's aFRR demand to the sum of aFRR demands of all participating TSOs for the same direction of aFRR demand;

(b) all borders between participating TSOs shall be part of the IN-Platform.

(4) The purpose of the TSO-TSO settlement function shall be the calculation of the settlement amount that each participating TSO has to bear for the intended exchange of energy from the imbalance netting process.

(5) If and when relevant, the purpose of the CZC determination function shall be to implement the methodology for CZC calculation within the balancing timeframe in accordance with Article 37(3) of the EBGL.

Article 6
Governance

(1) The rules concerning the governance and operation of the IN-Platform shall ensure that no participating TSO benefits from unjustified economic advantages through the participation in the functions of the IN-Platform. Each member TSO shall have representatives in the SC and the EG. The member TSOs aim to find unanimous decisions. Where unanimity cannot be reached, qualified majority voting according to Article 7 of this INIF shall apply. The SC makes decisions according to Article 7(1)(a), 7(2) and 7(3) of this INIF.

(2) Each member TSO shall carry out the common governance principles of the IN-Platform by means of:

(a) the steering committee of the IN-Platform, which is the decision-making body of the IN-Platform with the right to make any binding decision on any matter or question related to the IN-Platform and not covered by the Article 7(1)(b) of this INIF. Thereto, each member TSO shall appoint at least one regular representative to the SC. It is a superior body to the EG;

(b) the expert group of the IN-Platform, which is the expert body of the IN-Platform and prepares background materials for the SC (e.g.: analyses, impact assessments, summaries) and evaluates and proposes concepts in relation to the development, governance and operation of the IN-Platform. Thereto, each member TSO shall appoint at least one

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

regular representative to the EG.

(3) Each member TSO shall actively cooperate with all other member TSOs in order to:

(a) create and revise concepts related to the settlement of intended exchange of energy from the imbalance netting process;

(b) monitor the correct implementation and execution of the settlement of intended exchange of energy from the imbalance netting process.

(4) Each participating TSO shall implement and carry out the necessary procedures for the usage of the IN-Platform in a proper and timely manner.

Article 7
Decision-making

(1) Decisions leading to a change of the INIF or the approved methodologies according to Articles 30(3) or 50(1)(d) of the EBGL shall be made according to the following process:

(a) member TSOs' decision: all member TSOs shall approve in advance a proposal to be sent to all TSOs for decision;

(b) all TSOs' decision: shall be subject to the approval of all TSOs pursuant to the voting principles of Article 4(3) of the EBGL, where all TSOs include both all member TSOs and non-member TSOs in the framework of the SC of the IN-Platform and this decision-making process is independent from the member TSO's decision process from the aspect of member TSOs.

(2) Decisions concerning the IN-Platform not leading to a change of the INIF or the approved methodologies according to Articles 30(3) or 50(1)(d) of the EBGL but affecting all member TSOs shall be subject to approval by all member TSOs.

(3) Decisions concerning the IN-Platform not leading to a change of the INIF and only affecting a geographical area of several member TSOs smaller than the geographical area of all member TSOs shall be subject to approval by the member TSOs of the concerned region.

(4) In case of decisions according to paragraph 1(a), 2 and 3, each member TSO of the concerned region is expected to take part in the decision-making process. The quorum for initiating a decision-making process is a majority (50 % + 1) of the member TSOs that are present or represented through another member TSO participating in the decision-making process.

(5) The member TSOs shall implement a decision-making process which ensures effective decision-making with the aim to make decisions unanimously. Where unanimity cannot be reached, qualified majority voting shall apply.

(6) Decisions according to paragraph 1(a) and 2 where no consensus is reached shall, pursuant to the voting principles of Article 4(3) of the EBGL, require a majority of:

(a) member TSOs representing at least 55 % of the TSOs' countries concerned and present or represented according to paragraph 4; and

(b) member TSOs representing countries comprising at least 65 % of the population of

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

countries concerned and present or represented according to paragraph 4.

(7) Decisions according to paragraph 3 where no consensus is reached shall, pursuant to the voting principles of Article 4(4) of the EBGL, require a majority of:

(a) member TSOs representing at least 72 % of the member TSOs' countries of the concerned region and present or represented according to paragraph 4; and

(b) member TSOs representing countries comprising at least 65 % of the population of member TSOs' countries of the concerned region and present or represented according to paragraph 4.

(8) Decisions in accordance with paragraph 3 in relation to regions concerned composed of five countries or less shall be decided based on consensus.

(9) Voting on SC decisions can be made in physical meetings, conference calls or by circular resolution via e-mail.

Article 8
Proposal for entity or entities

(1) All TSOs shall appoint the real-time entity for operating the imbalance netting process function.

(2) All TSOs shall appoint the IN-Platform settlement entity for operating the TSO-TSO settlement function.

Article 9
Framework for harmonisation of the terms and conditions related to balancing

All TSOs agree that there is no need for harmonisation of terms and conditions related to balancing for the establishment of the IN-Platform.

Article 10
Categorisation of costs and detailed principles for sharing the costs

(1) The costs of establishing, amending and operating the IN-Platform shall be broken down into:

(a) common costs resulting from coordinated activities of all member TSOs in the IN-Platform;

(b) regional costs resulting from activities of several but not all member TSOs in the IN-Platform;

(c) national costs resulting from activities of the member TSOs in the TSOs' countries concerned and participating in the IN-Platform.

(2) Common costs shall include costs resulting from the SC decisions on proposals related to:

(a) common costs for establishing or amending the IN-Platform consist of:

i. implementation of new functionalities in the imbalance netting process function which have an impact on the intended or unintended exchange of energy and which

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

is for the benefit of all member TSOs;

ii. implementation of new functionalities in the TSO-TSO settlement function which have an impact on the TSO-TSO settlement;

iii. commissioning of joint studies for the benefit of all member TSOs.

(b) common costs of operating the IN-Platform consist of:

i. operational costs related to the operation of the imbalance netting process function which are agreed as common costs by member TSOs in accordance with the decision process according to Article 7;

ii. operational costs related to the operation of the TSO-TSO settlement function which are agreed as common costs by member TSOs in accordance with the decision process according to Article 7.

(3) Costs pursuant to paragraph 5 shall not be borne by member TSOs that are not participating TSOs in the IN-Platform.

(4) The common costs in accordance to paragraph 2(a) shall be shared among the member TSOs according to the following principles set out by article 23 of the EBGL:

(a) one eighth of common costs shall be divided equally between Member States and third countries whose TSOs are member TSOs;

(b) five eighths of common costs shall be divided proportionally to the consumption of Member States and third countries whose TSOs are member TSOs;

(c) two eighths of common costs shall be divided equally between member TSOs.

(5) The common costs in accordance to paragraph 2(b) shall be shared among the participating TSOs according to the following principles set out by Article 23 of the EBGL:

(a) one eighth of common costs shall be divided equally between Member States and third countries whose TSOs are participating TSOs;

(b) five eighths of common costs shall be divided proportionally to the consumption of Member States and third countries whose TSOs are participating TSOs;

(c) two eighths of common costs shall be divided equally between participating TSOs.

(6) Regional costs shall be borne by member TSOs of the concerned region and consist of:

(a) regional costs for establishing or amending the IN-Platform:

i. implementation of new functionalities in the imbalance netting process function which have an impact on the intended or unintended exchange of energy and which are applicable only by several, directly beneficiary member TSOs;

ii. implementation of new functionalities in the TSO-TSO settlement function which have an impact on the TSO-TSO settlement of only several, directly beneficiary member TSOs;

iii. commissioning of joint studies performed for only several, directly beneficiary member TSOs.

(b) regional costs of operating IN-Platform:

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

i. operational costs related to the operation of the imbalance netting process function which are agreed as regional costs by member TSOs in accordance with the member TSOs' decision process according to Article 7;

ii. operational costs related to the operation of the TSO-TSO settlement function which are agreed as regional costs by member TSOs in accordance with the decision process according to Article 7.

(7) Costs pursuant to paragraph 9 shall not be borne by member TSOs that are not participating TSOs in the IN-Platform.

(8) The regional costs in accordance to paragraph 6(a) shall be shared among the member TSOs of the concerned region according to the following principles set out by article 23 of the EBGL:

(a) one eighth of regional costs shall be divided equally between Member States and third countries whose TSOs are member TSOs of the concerned region;

(b) five eighths of regional costs shall be divided proportionally to the consumption of Member States and third countries whose TSOs are member TSOs of the concerned region;

(c) two eighths of regional costs shall be divided equally between member TSOs of the concerned region.

(9) The regional costs in accordance to paragraph 2(b) shall be shared among the participating TSOs of the concerned region according to the following principles set out by article 23 of the EBGL:

(a) one eighth of regional costs shall be divided equally between Member States and third countries whose TSOs are participating TSOs of the concerned region;

(b) five eighths of regional costs shall be divided proportionally to the consumption of Member States and third countries whose TSOs are participating TSOs of the concerned region; and

(c) two eighths of regional costs shall be divided equally between participating TSOs of the concerned region.

(10) National costs shall be the costs for using the IN-Platform, which consist of the costs of development, implementation, operation and maintenance of technical infrastructure and procedures as well as for the settlement process.

(11) Each member TSO shall bear its own individual costs and is solely responsible (i.e.: no joint and several liability) for the due payment of all the costs related to the technical infrastructure necessary for the successful usage of the IN-Platform.

(12) The cost sharing principle shall apply solely to costs incurred after the approval of the INIF.

(13) For the avoidance of any doubts, all TSOs agree not to share any costs incurred before the approval of the INIF.

(14) For avoidance of doubts, if a TSO becomes a member TSO after approval of the INIF, the TSO shall pay its share of costs pursuant to paragraph 2(a)(i) and (ii) also retrospectively in accordance with paragraph 4, 15 and 16 of this Article.

(15) When sharing the costs according to paragraph (4) and (8) of this Article, the TSO's share of the

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

costs of the member TSOs shall consider only the member TSOs appointed in the LFC area operational agreement as responsible for implementing and operating the automatic frequency restoration process in this LFC area according to Article 143(4) of the SOGL. For the avoidance of any doubt, the member TSOs that are not appointed as responsible for implementing and operating the automatic frequency restoration process will not have to borne costs related to paragraphs (4)(c) and (8)(c).

(16) In case several member TSOs are active in a Member State, the Member State's share of the costs shall be distributed among those member TSOs proportionally to the consumption in the member TSOs' monitoring areas.

(17) In case several participating TSOs are active in a Member State, the Member State's share of the costs shall be distributed among those participating TSOs proportionally to the consumption in the participating TSOs' monitoring areas.

(18) When sharing the costs according to paragraph (5) and (9) of this Article, the consumption share of the costs of a participating TSO shall consider respectively the consumption of the member TSOs, which appointed the participating TSO to perform the automatic frequency restoration process according to Article 143(4) of the SOGL. For the avoidance of any doubt, the member TSOs that are not appointed as responsible for implementing and operating the automatic frequency restoration process will not have to borne costs related to paragraphs (5)(a), (5)(c), (9)(a) and (9)(c).

Article 11
Description of the algorithm for the operation of imbalance netting process function

(1) The algorithm for the operation of imbalance netting process function shall be based on the following principles and shall be valid for imbalance netting within a synchronous area and between synchronous areas:

(a) the imbalance netting process function calculates imbalance netting power interchange by defining an active power flow over a virtual tie line which is part of the frequency restoration control error ("FRCE") calculation of the individual LFC area. This active power flow over a virtual tie line is equal to the correction;

(b) the control target of the imbalance netting process function aims at reducing the amount of simultaneous counteracting aFRR activations of the different LFC areas of the participating TSOs by imbalance netting power interchange;

(c) the assignment of imbalance netting potential among participating TSOs in each real-time optimisation cycle is based upon the principles of proportional distribution according to Article 5(3)(a);

(d) the interaction between the imbalance netting process function and participating TSOs is defined by the following:

i. each participating TSO calculates the aFRR demand and the CZC of its LFC area according to Article 3 of this INIF,

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

ii. the aFRR demands are sent to the imbalance netting process function,

iii. the imbalance netting process function calculates the corrections whilst respecting the available CZC,

iv. the corrections are sent to the participating TSOs and are used by them,

v. the corrections for cross-synchronous imbalance netting are used for adjusting the active power flows over HVDC interconnectors compliant to Article 147 of the SOGL;

(2) Each member TSO belonging to an LFC block shall have the right to perform imbalance netting with the other TSO(s) of the same LFC block prior the imbalance netting with other LFC blocks and, by this, have prior access to the transmission capacity within the LFC block. Imbalance netting within an LFC block is not considered as an optimisation region.

(3) Implicit imbalance netting between TSOs exchanging aFRR is not considered in the imbalance netting process performed by the IN-Platform.

(4) Each member TSO shall have the right to participate in an optimisation region in accordance with the following rules:

(a) An optimisation region is a region preceding the imbalance netting among all LFC blocks of the IN-Platform and, by this, the TSOs of the concerned optimisation region have prior access to the transmission capacity of borders which are shared by two TSOs involved in the concerned optimisation region. The TSOs of the concerned optimisation region have no prior access to any other transmission capacity of borders.

(b) The optimal distribution of activation of balancing energy bids in an optimisation region obtained as a result of the TSOs exchanging balancing energy from aFRR shall be respected by the imbalance netting optimisation process function, without reducing the overall netting volume.

(c) If one or more optimisation regions exist, all the remaining LFC blocks not being part of any of these optimisation regions shall have the right to participate in an optimisation region for imbalance netting, preceding the imbalance netting among all LFC blocks of the IN-Platform, having prior access to the transmission capacity of borders which are shared by two TSOs of the respective optimisation region.

(d) Each LFC block participating in the IN-Platform can have only one optimisation region with other LFC block(s) preceding the imbalance netting among all LFC blocks of the IN-platform.

(5) The TSOs being involved in an optimisation region may form a concerned region pursuant to the governance described in Article 6, decision-making in accordance with Article 7 and categorisation of costs in accordance with Article 10(1)(b) of this INIF.

(6) All optimisation regions are optimised by the algorithm of imbalance netting process function of the IN-Platform.

(7) The impact of optimisation regions on the individual netting volumes of all participating TSOs shall be regularly monitored and reported in accordance with Article 59 of the EBGL.

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

Article 12
Publication and implementation of the INIF

(1) The TSOs shall implement the INIF in accordance with Article 4 of this INIF.

(2) The TSOs shall publish the INIF without undue delay after all NRAs have approved the INIF or a decision has been taken by the Agency for the Cooperation of Energy Regulators in accordance with Article 5(7), Article 6(1) and Article 6(2) of the EBGL.

Article 13
Language

The reference language for this proposal shall be English. For the avoidance of doubt, where TSOs need to translate this proposal into their national language(s), in the event of inconsistencies between the English version published by TSOs in accordance with Article 7 of the EBGL and any version in another language, the relevant TSOs shall, in accordance with national legislation, provide the relevant national regulatory authorities with an updated translation of the proposal.

ENTSO-E AISBL • Avenue de Cortenbergh 100 • 1000 Brussels • Belgium • Tel + 32 2 741 09 50 • Fax + 32 2 741 09 51 • info@entsoe.eu • www. entsoe.eu

Explanatory Document to All TSOs' proposal for the implementation framework for a European platform for the imbalance netting process in accordance with Article 22 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing

18 June 2018

DISCLAIMER

This document is submitted by all transmission system operators (TSOs) to all NRAs for information purposes only accompanying the 'All TSOs' proposal for the implementation framework for a European platform for the imbalance netting process in accordance with Article 22 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing'.

Contents

Figures

1 Introduction

This document gives background information and rationale for the all TSOs proposal for the implementation framework for a European platform for the imbalance netting process (this proposal is hereafter referred to as the "INIF"), required by Article 22 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (hereafter referred to as "EBGL").

1.1 Content of this document

This document is built up as follows: Chapter 2 contains an explanation of the proposal of entity that will perform the imbalance netting process function and the proposal of entity that will perform the TSO-TSO settlement function. Chapter 3 includes the explanation of Article 9 of the INIF. Chapter 4 provides explanations and examples on the terms 'member TSO', 'participating TSO' and the cost sharing. Chapter 6 provides the detailed description of the algorithm for the operation of imbalance netting process function with the examples of calculations, particularly examples for unrestricted optimisation (without limits), optimisation with limits and for application of optimisation regions.

2 Implementation of the IN-Platform

The IGCC will become the future IN-Platform. As described in Article 1 of the INIF, all TSOs of the synchronous area Continental Europe ("CE") performing the aFRR process are responsible for the implementation of the IN-Platform and have to use the IN-Platform one year after the approval of the INIF. At the time of writing, 11 TSOs are already connected to the IGCC project. Eleven additional TSOs have to operationally access the IGCC according to the EBGL. Based on the experience of previous IGCC accessions, all TSOs expect the individual accession process to take between 6 and 12 months, including all technical and regulatory changes. However, most of the necessary national technical changes and all regulatory changes of individual TSOs can be implemented in parallel. To guarantee operational security, all TSOs foresee a sequential testing and go-live of individual TSOs. Figure 1 shows the resulting indicative accession timeline for the future IGCC operational members.

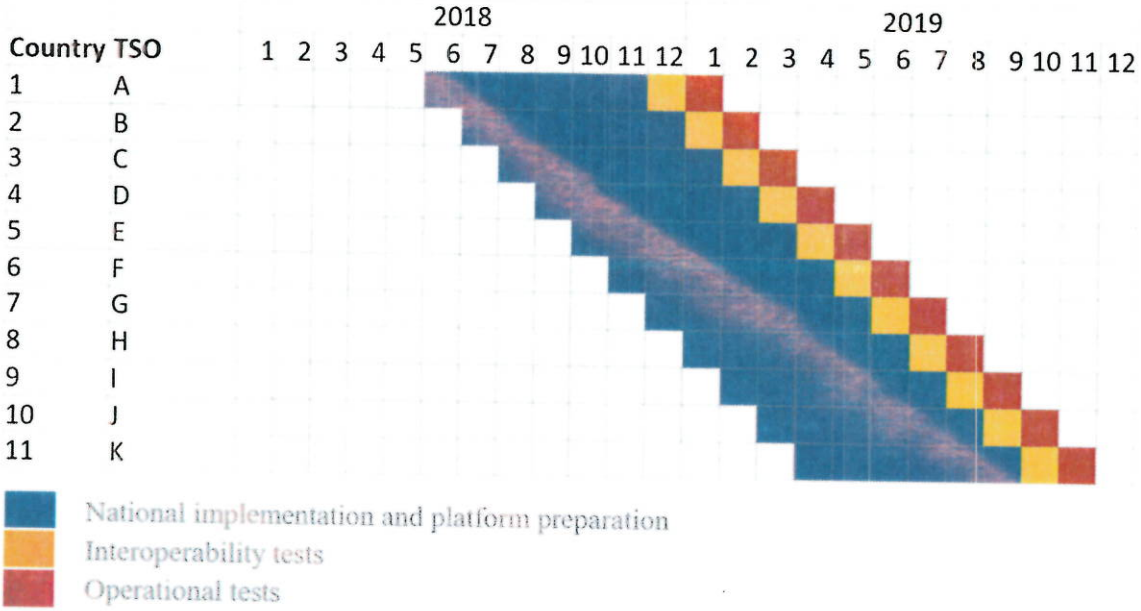


Figure 1. Indicative accession timeline for future IN-Platform participating TSOs

In addition to a public consultation of any modifications to the INIF, stakeholders will be informed of the updates related to the IN-Platform through the IGCC website[1].

3 Functions of the IN-Platform

3.1 Imbalance netting process function

During the development of the INIF, the following options were examined by all TSOs for the designation of any entity entrusted with operating the imbalance netting process function:

(a) Appointing one or more TSOs to operate the imbalance netting process function on behalf of all TSOs;

(b) Creating a new entity to operate the imbalance netting process function as a vehicle of cooperation among TSOs and on their behalf;

(c) Designating an existing entity to operate the imbalance netting process function as a vehicle of cooperation among TSOs and on their behalf;

(d) Appointing the development and operation of the imbalance netting process function to a third party independent from the TSOs.

Having considered the above options, all TSOs conclude that appointing a real-time entity, which is one EU TSO or an entity fomed by EU TSOs, to operate the imbalance netting process function is the most efficient and pragmatic approach. Currently, a EU TSO operates the IGCC, which is the implementation project which will serve as basis for development of the IN-Platform as agreed by all TSOsdue to following reasons:

(a) The imbalance netting process function of IGCC is already implemented and operates the imbalance netting process of 11 TSOs; by this, implementation costs can be avoided;

(b) IGCC is in operation since 2010 – the entity currently operating the IGCC and the TSOs have gained a vast operational experience in operation of the imbalance netting process with an availability higher than 99.9 % of time;

(c) Due to the impact on operational security, implementation of real-time processes and their coordination must be allocated within the infrastructure of the TSOs and fulfil the respective infrastructure security and reliability requirements;

(d) A close interaction with other real-time operational processes is ensured.

3.2 TSO-TSO settlement function

When developing the INIF, the following options were examined by all TSOs for the designation of any entity entrusted with operating the TSO-TSO settlement function:

(a) Appointing one or more TSOs to operate the TSO-TSO settlement function on behalf of all TSOs;

[1] https://www.entsoe.eu/network_codes/eb/imbalance-netting/

(b) Creating a new entity to operate the TSO-TSO settlement function among TSOs and on their behalf;

(c) Designating an existing entity to operate the TSO-TSO settlement function among TSOs and on their behalf;

(d) Appointing the development and operation of the TSO-TSO settlement function to a third party independent from the TSOs.

Having considered the above options, all TSOs conclude that appointing an settlement entity for imbalance netting, which is a EU TSO or an entity formed by EU TSOs, to operate the TSO-TSO settlement function among TSOs and on their behalf is the most efficient and pragmatic approach. Currently, a EU TSO operates the IGCC, which is the implementation project which will serve as basis for development of the IN-Platform as agreed by all TSOs, due to following reasons:

(a) The proposed TSO-TSO settlement function is already implemented in the IGCC and operates the TSO-TSO settlement of 11 TSOs; by this, implementation costs can be avoided. TSO-TSO settlement will be subject to an all-TSO approval of the proposal according to Article 50(1)(d);

(b) IGCC is in operation since 2010 – the entity currently operating the IGCC and the TSOs have gained a vast operational experience in operation of the TSO-TSO settlement function;

(c) Data availability and coordination at the host-level of the entity currently operating the IGCC is more efficient than a decentralised solution at individual TSOs;

(d) One centralised solution for all balancing products is not seen as beneficial at this point of time. This solution will be revised within the ENTSO-E framework when the market design and settlement characteristics of other European balancing platforms is more advanced.

The entity currently operating the IGCC is TransnetBW. IGCC was appointed by ENTSO-E as the implementation project for the IN-Platform on 11 February 2016.

Further information about the settlement process used in IGCC at the time of writing can be found in Chapter 6 'Settlement Principles' of the 'Stakeholder document for the principles of IGCC' located in the ENTSO-E website[2]. The proposals pursuant Article 30(3), Article 50(1)(d) and Article 52(2) of the EBGL are out of scope of the INIF.

4 Member TSOs, participating TSOs, cost sharing and decision-making

As explained in the Article 1 of the INIF, the use of the IN-Platform is compulsory for all TSOs of the Continental Europe synchronous area performing the automatic frequency restoration process. The deadline for implementing and making operational of the IN-Platform is one year after the approval of the INIF. Finally, the deadline for the TSOs in Contintental Europe to use the IN-Platform is also one year after the approval of the INIF (subject to derogation of national regulatory authority).

Member TSOs are those TSOs that have joined the IN-Platform. These TSOs participate in the decision-making of the Steering Committee of the platform and are responsible to implement and comply with the

2 https://www.entsoe.eu/Documents/Network%20codes%20documents/Implementation/IGCC/20161020_IGCC_Stakeholder_document.pdf

decisions made. The TSOs that have the obligation to use the IN-Platform have to become member TSOs by one year after the approval of the INIF.

Participating TSOs are member TSOs that use the IN-Platform for intended exchange of energy, i.e.: they are a subset of member TSOs. The target is that all member TSOs will become participating TSOs by one year after approval of INIF at the latest, subject to national derogation. The only exception would be when an LFC area consists of more than one monitoring area. In such case, only the TSO appointed in the LFC area operational agreement as responsible for the implementation and operation of the automatic frequency restoration process according to Article 143(4) of the SOGL shall use the IN-Platform, i.e.: become a participating TSO. The reason to differentiate between member TSOs and participating TSOs is the following:

(a) The IGCC project may fulfil the requirements according to the INIF earlier than the deadline of one year after the approval of the INIF, which means that the IN-Platform will be operational before that deadline. Therefore, some member TSOs may become participating TSOs before the deadline to use the IN-Platform, i.e.: one year after approval of the INIF.

(b) If necessary, a member TSO may apply for a derogation from using the IN-Platform by one year after the approval of INIF. Therefore, a member TSO can become a participating TSOs later than the deadline of one year after approval of INIF, according to granted derogation.

Member TSOs are bearing the common costs of establishing and amending the platform according to Article 10(4) and 10(8) of the INIF. However, any common operational costs according to Article 10(5) and 10(9) of the INIF are being borne only by the participating TSOs since these are using the IN-Platform operationally.

In order to implement and operate the IN-Platform, the member TSOs are required to make decisions through the Steering Committee on a wide variety of topics. In doing so, TSOs will aim for unanimity and will focus on good communication and processes to facilitate that aim. However, in case unanimity shows to be unfeasible (for example, due to conflicting local needs), qualified majority voting will be used. The qualified majority voting principles are modelled after those given in EBGL, although voting is done by member TSOs. This includes member TSOs who are not yet participating TSOs.

In case of a vote, a quorum of at least the majority (50 % + 1) of the member TSOs involved in the vote is required. Requiring a quorum ensures that each party is aware of the voting process and that the argumentation of all parties can be taken into account in a proper way in the decision process.

5 Framework for harmonisation of the terms and conditions related to balancing

The imbalance netting process is the process that aims to minimise the amount of activated aFRR, by avoiding their simultaneous counteractivation. The process does not require any activation of standard neither specific products for balancing energy. Moreover, in accordance with the Article 1 of the INIF, common settlement rules for the TSO-TSO settlement will be proposed and defined pursuant to Article 50 of the EBGL. Thus, all TSOs consider that there is no need for harmonisation of terms and conditions related to balancing for the establishment of the IN-Platform.

6 Description of the algorithm for the operation of imbalance netting process function

The optimisation algorithm is part of the imbalance netting process function operated by the real-time entity. The imbalance netting process function calculates the corrections in real-time for each LFC area, resulting in imbalance netting. This chapter describes the basic principles of the optimisation calculation.

In order to ensure that there are fall-back solutions in place, on the one hand, the imbalance netting process function is implemented in two different locations and has at each location a back-up system in operation. Furthermore, real-time communication between the platform and the participating TSOs is implemented via two redundant communication lines. As a result of these, there is four-time redundancy in the entire system for the sake of avoiding any failure in the operation of IN-Platform.

Further information about the imbalance netting process function can be found in chapter 3 "IGCC Algorithm – Description of the optimisation" of the "Stakeholder document for the principles of IGCC" located in the ENTSO-E website[3].

6.1 Interaction between the aFRR-Platform and the IN-Platform

It is foreseen that the aFRR-Platform implements an implicit imbalance netting process. Hence, in case the geographical region of the IN-Platform is part of the geographical region of the aFRR-Platform, a separate algorithm for the IN-Platform will no longer be necessary. By this, the number of entities and the operational effort would decrease while maintaining the same level of economic efficiency, which could increase the overall efficiency of the balancing platforms for imbalance netting and aFRR.

During the transition period, while the geographical regions are not the same (e.g.: due to derogations), the consistent usage of available CZC for the IN-Platform and the aFRR-Platform at the same time has to be ensured. A calculation of both processes in one activation optimisation function guarantees this necessary consistency. All TSOs foresee to include both (IN and aFRR) processes in the AOF of the aFRR-Platform.

From an efficiency point of view, an early merging of both platforms would be beneficial. Therefore, the TSOs recommend NRAs to enable and incentivise the geographical regions of the participating TSOs in the aFRR-Platform to be at least the same as the geographical regions of the participating TSOs in the IN-Platform.

FCR is not considered as it is out of scope of the EBGL.

6.2 Congestion management

The available cross-zonal capacity is calculated in accordance with Article 37 of the EBGL. Initially, there will not be any harmonized recalculation of cross-zonal capacity after intraday markets. Recalculation of the CZC for balancing is outside the scope of the INIF and will be done at a later stage on a capacity calculation region level, in accordance with Article 37(3) of the EBGL which requires a common methodology to be defined 5 years after the entry into force of the EBGL. However, Article 36 of the EBGL provides also the possibility to allocate CZC for the exchange of balancing capacity and sharing of reserves, that needs to be taken into account in the calculation of available CZC. In case parts of the whole European intraday market are performed in a flow-based domain, an extraction of available cross-zonal capacity per bidding zone border will be used, comparable to the process between the market coupling in the CORE region and the succeeding intraday market. The available cross-zonal capacity used for IN process will take into account previous balancing processes.

More in detail, the algorithm will consider available cross-zonal capacities defined between LFC areas and will make sure that the cross-border exchange for imbalance netting from the optimization must not exceed the cross-zonal capacity remaining after previous balancing processes. In order to respect operational

3 https://www.entsoe.eu/Documents/Network%20codes%20documents/Implementation/IGCC/20161020_IGCC_Stakeholder_document.pdf

security limitations and handle or avoid congested situations TSOs shall also be able to limit the available CZC. The algorithm is then required to take these manual limitations into account in the optimisation result. Bidding zone borders inside an LFC area and the respective cross-zonal capacity limitations shall not be explicitly considered by the optimisation algorithm, for the reasons that the aFRR demand is defined and located per LFC area and it is not possible to calculate the inner-bidding zone cross-border flows in such a case.

If a border between LFC areas or LFC blocks does not match with a border between bidding zones according to CACM, the available cross-zonal capacity on this border is considered infinite in default mode or equal to the respective IT platform technical limit. The current idea is that the technical IT limitations are designed to implement a plausibility check on the CZC that are used as input by the AOF. The goal is to prevent that CZCs that are manifestly erroneous (due to IT or communication errors for instance) are used as such by the algorithm. Any value send as input would be capped to a certain value. However, this value should not be limitative with respect to any realistic physical follows that could happen on this border. Typically, the maximum physical capacity of the border could be used to cap the CZC sent. As the borders have a very different physical capacities and different nature, it is seen as more efficient to define a border specific plausibility check instead of a single IT technical limitation for all borders. The TSO will agree on the more detailed values in such a way that the values are not limitative for the market.

Following figure illustrates potential configuration cases:

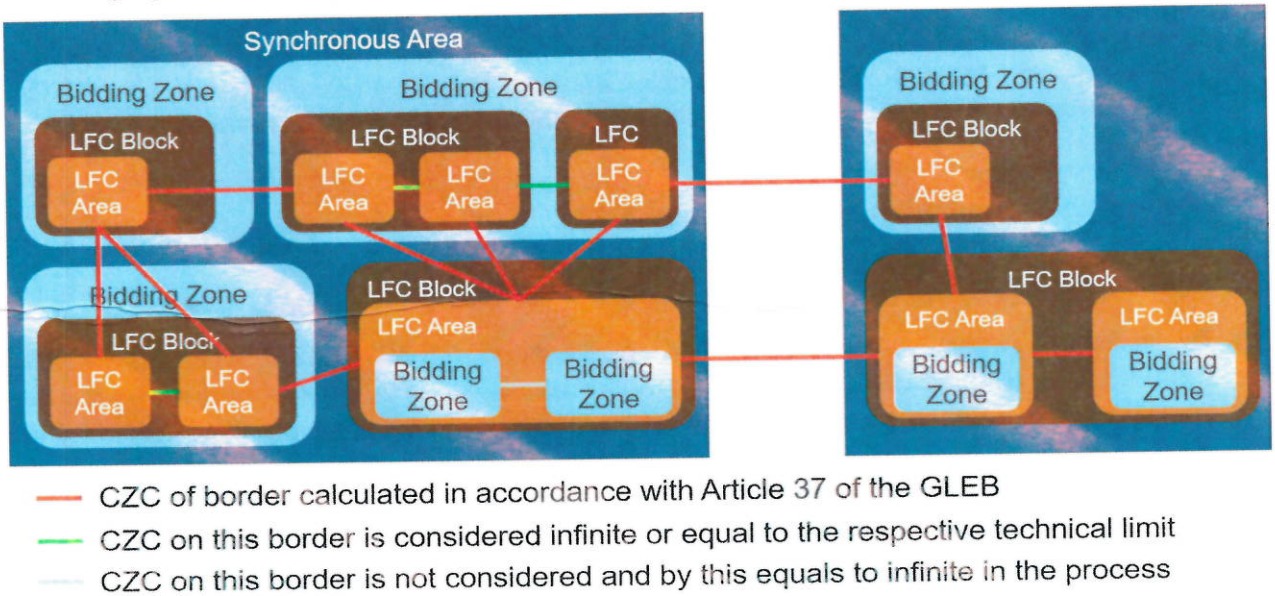


Figure 2: Example LFC structure configuration for participating synchronous areas

The cases are the following:

A. A bidding zone can consist of one LFC block which consists of one LFC area (e.g. France);

B. A bidding zone can consist of one LFC block with more than one LFC areas (Germany after the bidding zone split);

C. A bidding zone can consist of more than one LFC block and each of the LFC block can have more than one LFC areas (bidding zone of Germany and Austria before the bidding zone split);

D. A LFC block can consist of one LFC area which includes more than one bidding zone (Italy, current NORDIC configuration);

E. A LFC block consists of more than one LFC area where each LFC area equals one bidding zone (future NORDIC system).

For the illustrated configurations the CZC is initially defined as follows:

1. The CZC between bidding zones (red links) is calculated in accordance with Article 37 of the EBGL;
2. CZCs within bidding zones (green links) are considered infinite or equal to the respective technical limitation;
3. CZC between bidding zones within a LFC area (grey links) cannot be considered by the AOF and are by this considered as infinite in the AOF;
4. If a technical profile on the sum of several borders[4] is defined in the intraday market, such limits will also be taken into account in the AOF.

CZC will be used as the main constraints of the objective function of AOF and in case of congestion congested areas will be defined with associated impact on cross border marginal prices.

CZC updated values will be provided directly by participating TSOs to IN-Platform in real time on local control cycle basis.

In case of CZC between TSOs, TSO can choose one of both to send the CZC values in real time. If both TSOs want to send the CZC values in real time, then minimum value of CZC will be used by AOF.

In downgraded situation, when no other measures are feasible, participating TSOs responsible to send the CZC will have the possibility to reduce the CZC values manually in real time (requested on his own or by any affected TSO for operational limitation in accordance with Article 150 of the GL SO), in case of congestion or constraint link to a CZC border.

6.3 Examples for the calculation of the imbalance netting algorithm

6.3.1 Unrestricted optimisation

Figure 3 demonstrates the calculation of the correction values without limitations. LFC areas A and B are short (1000 MW in total) while LFC areas C and D are long (500 MW in total).

Therefore, the optimisation targets are to fully net the aFRR demand of C and D and to distribute the netting for A and B according to the respective shares of the overall positive aFRR demand. Since there are no limitations, the optimisation target can be reached (the deviation from the optimisation target is zero).

[4] Such technical profiles are defined (at least) on the borders out of Poland; from NO2 and NO5 into NO1; and from NO2 and SE3 into DK1

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-100	-400	50	450
Remaining aFRR-Demand [MW]	200+(-100) = 100	800+(-400) = 400	-50+50 = 0	-450+450 = 0
Deviation from Target [MW]	-100-(-100) = 0	-400-(-400) = 0	50-50 = 0	450-450 = 0
Deviation/aFRR-Demand (Absolute Value) [pu]	| 0/200 |= 0	| 0/800 | = 0	| 0/50 | = 0	| 0/450 | = 0

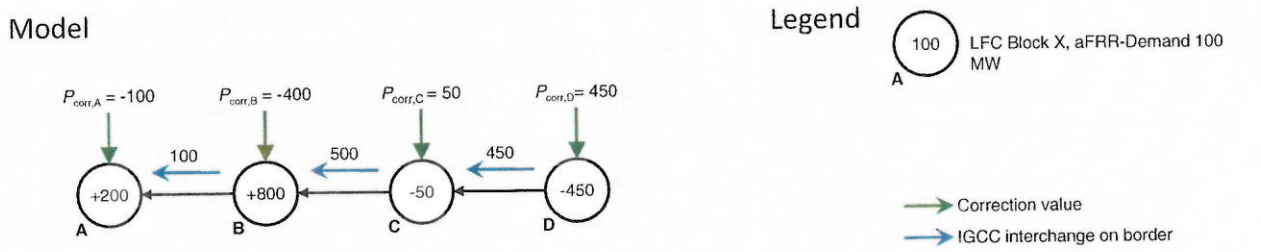


Figure 3. Example without consideration of restrictions

6.3.2 Impact of limitations

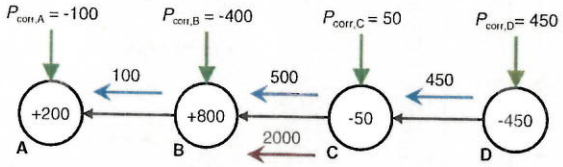
In accordance with Article 3(5) of the INIF, limitations to the calculation of the correction value include available cross-zonal capacity (CZC) calculated in accordance with Article 37 of the EBGL and additional limitations to the available CZC requested by affected TSOs in accordance with Article 150 of the SOGL. However, in case two or more TSOs are exchanging balancing capacity, Article 36(2) of the EBGL provides the possibility to use CZC for the exchange of balancing capacity. If balancing capacity is exchanged or reserves are shared between two or more TSOs, the allocated capacity needs to be taken into account in the calculation of available CZC for the imbalance netting process. No other limitations other than those on the available CZC will apply in normal operation in the IN-Platform. This is different from the current operation of the IGCC, where some TSOs limit the maximum individual import and export to their available aFRR volume.

Figure 4 to Figure 13 demonstrate the calculation of the correction value for different scenarios with four LFC areas.

Figure 4 shows the same scenario as in Figure 3 but with a limitation on the concerned border between B and C. The exchange in the direction from C to B is limited to 2000 MW (this value could represent the available CZC or a limitation in accordance with the INIF). The limitation does not affect the correction value (being higher than the value of 500 MW which is needed to reach the optimisation targets).

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-100	-400	50	450
Remaining aFRR-Demand [MW]	200+(-100) = 100	800+(-400) = 400	-50+50 = 0	-450+450 = 0
Deviation from Target [MW]	-100-(-100) = 0	-400-(-400) = 0	50-50 = 0	450-450 = 0
Deviation/aFRR-Demand (Absolute Value) [pu]	| 0/200 |= 0	| 0/800 | = 0	| 0/(-50) | = 0	| 0/(-450) | = 0

Model



Legend

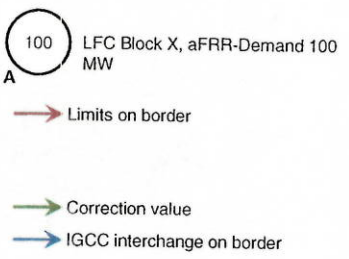
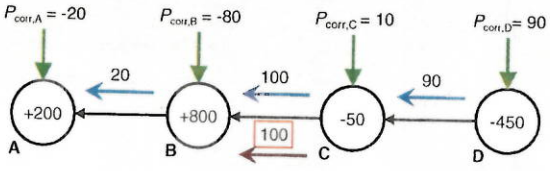


Figure 4. One limitation (not Active)

Figure 5 shows the scenario with a more restrictive limit on the concerned border between B and C. The exchange in the direction from C to B is limited to 100 MW. Therefore, only 100 MW can be exported from C and D to A and B and the optimisation targets cannot be reached. The impact of the limitations is distributed according to the shares used for the calculation of the optimisation target, i. e.: A imports a share of 0.2 of 100 MW and B imports 0.8 of the 100 MW. Accordingly, C exports a share of 0.1 of 100 MW and D exports a share of 0.9 of 100 MW.

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-20	-80	10	90
Remaining aFRR-Demand [MW]	200+(-20) = 180	800+(-80) = 720	-50+10 = -40	-450+90 = -360
Deviation from Target [MW]	-100-(-20) = -80	-400-(-80) = -320	50-10 = 40	450-90 = 360
Deviation/aFRR-Demand (Absolute Value) [pu]	| -80/200 | = 0.4	| -320/800 | = 0.4	| 40/(-50) | = 0.8	| 360/(-450) | = 0.8

Model



Legend

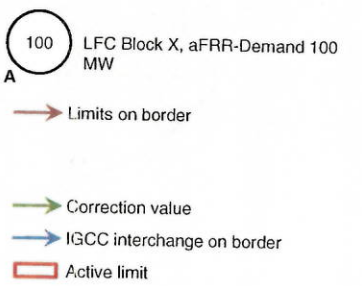


Figure 5. Example with one active limitation (1st example)

Figure 6 moves the limitation of 100 MW to the concerned border between D and C. Now the export of D is limited to 100 MW. Since the overall amount of short-aFRR demand is 1000 MW, C exports its complete long aFRR demand of 50 MW. A and B receive the respective shares of the overall export of 150 MW.

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-30	-120	50	100
Remaining aFRR-Demand [MW]	200+(-30) = 170	800+(-120) = 680	-50+50 = 0	-450+100 = -350
Deviation from Target [MW]	-100-(-30) = -70	-400-(-120) = -280	50-50 = 0	450-100 = 350
Deviation/aFRR-Demand (Absolute Value) [pu]	| -70/200 | = 0.35	| -280/800 | = 0.35	| 0/(-50) | = 0	| 350/(-450) | = 0.78

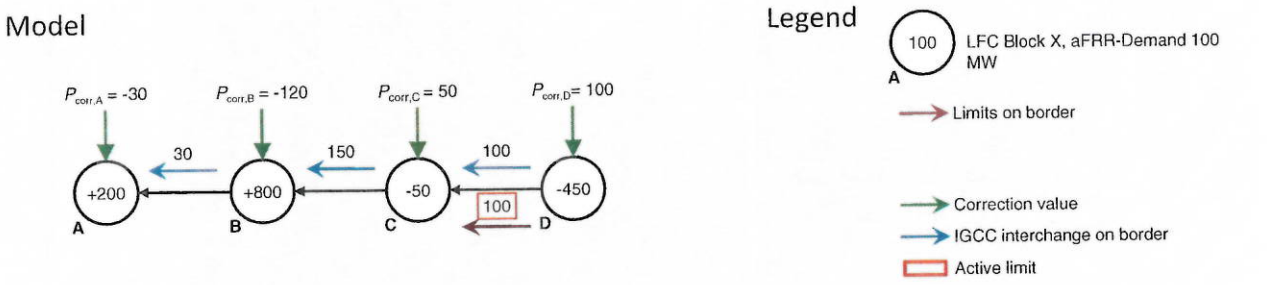


Figure 6. One Active limitation (2nd example)

Figure 7 introduces an additional concerned border between D and A. Although the limitation between D and C of 100 MW still exists, the border between D and A can be used to exchange the aditional 350 MW (no deviation from optimisation target).

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-100	-400	50	450
Remaining aFRR-Demand [MW]	200+(-100) = 100	800+(-400) = 400	-50+50 = 0	-450+450 = 0
Deviation from Target [MW]	-100-(-100) = 0	-400-(-400) = 0	50-50 = 0	450-450 = 0
Deviation/aFRR-Demand (Absolute Value) [pu]	| 0/200 |= 0	| 0/800 | = 0	| 0/(-50) | = 0	| 0/(-450) | = 0

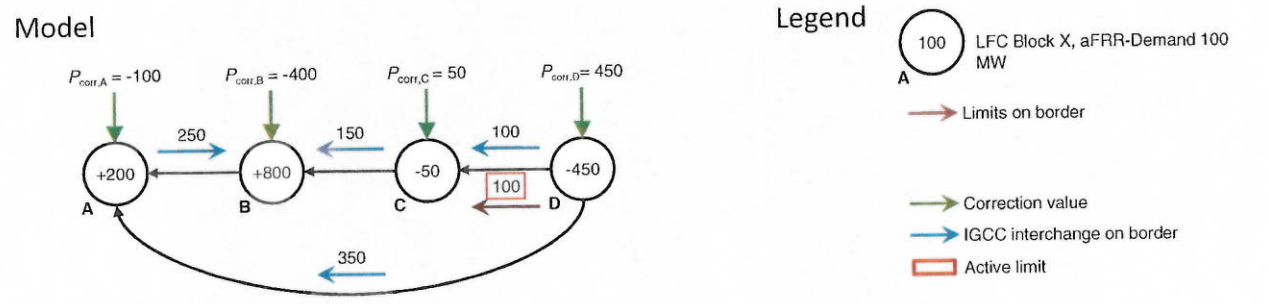


Figure 7. One active limitation without an impact on correction values

A profile limitation is a combination of limiting two or more border at the same time and by this a measure to ensure operational security. Currently applied in IGCC operation, profile limitations will be applicable in the future operation of the European platform for the imbalance netting process only in case of operational security, according to Article3(5) of the INIF. Figure 8 shows the example of limitations which affect a sum of two concerned borders (profile limitations). The sum of the exchange from D to C and from D to A is limited to zero which means that D cannot export its long imbalance. The impact on A and B is distributed according to the shares.

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-10	-40	50	0
Remaining aFRR-Demand [MW]	200+(-10) = 190	800+(-40) = 760	-50+50 = 0	-450+0 = -450
Deviation from Target [MW]	-100-(-10) = -90	-400-(-40) = -360	50-50 = 0	450-0 = 450
Deviation/aFRR-Demand (Absolute Value) [pu]	| -90/200 | = 0.45	| -360/800 | = 0.45	| 0/(-50) | = 0	| 450/(-450) | = 1

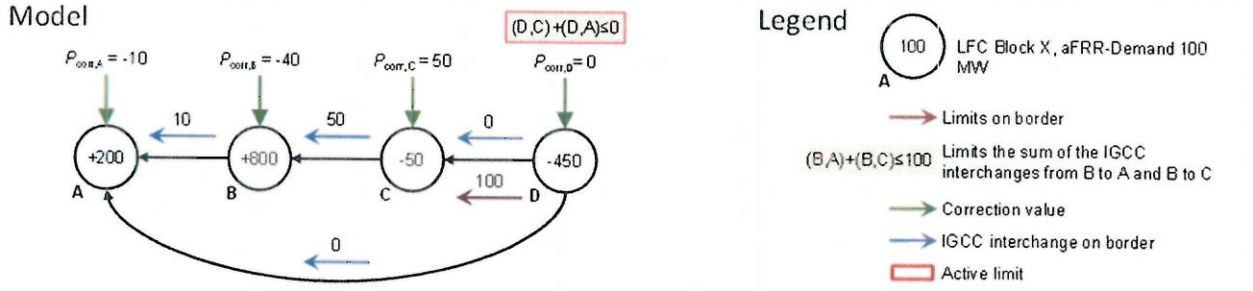


Figure 8. One active profile limitation

Figure 9 shows another example of an active profile-limitation. In this case the total import of B is limited to 100 MW through the restriction of sum of the exchanges from A to B and from C to B. Together with the maximum import of A, which is limited by the aFRR demand 200 MW, the overall import is limited to 300 MW. The impact is distributed proportionally to C (export of 270 MW) and D (export of 30 MW). Due to the restriction of the overall import to 300 MW the profile-limitation of D and the limitation from D to C remain inactive.

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-200	-100	30	270
Remaining aFRR-Demand [MW]	200+(-200) = 0	800+(-100) = 700	-50+30 = 20	-450+270 = 180
Deviation from Target [MW]	-100-(-200) = 100	-400-(-100) = -300	50-30 = 20	450-270 = 180
Deviation/aFRR-Demand (Absolute Value) [pu]	| 100/200 | = 0.5	| -300/800 | = 0.375	| 20/(-50) | = 0.4	| 180/(-450) | = 0.4

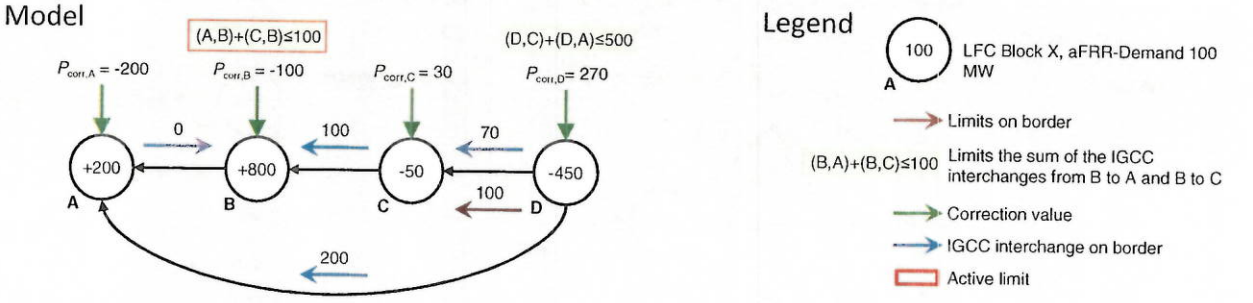


Figure 9. Combination of one active profile limit with other limits

Figure 10 introduces a further restriction of total exchange taking the scenario in Figure 9 as starting point. The CZC from D to A of 0 MW in combination with the CZC of D to C limits the export of D to 100 MW. Therefore, C and D can export 150 MW in total. Following the principle of proportional distribution B

would receive 120 MW as import, but the profile-limitation of B still restricts its import capability to 100 MW. The remaining 200 MW which cannot be imported by B are passed to A.

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-50	-100	50	100
Remaining aFRR-Demand [MW]	200+(-50) = 150	800+(-100) = 700	-50+50 = 0	-450+100 = 350
Deviation from Target [MW]	-100-(-50) = -50	-400-(-100) = -300	50-50 = 0	450-100 = 350
Deviation/aFRR-Demand (Absolute Value) [pu]	| -50/200 | = 0.25	| -300/800 | = 0.375	| 0/(-50) | = 0	| 350/(-450) | = 0.78

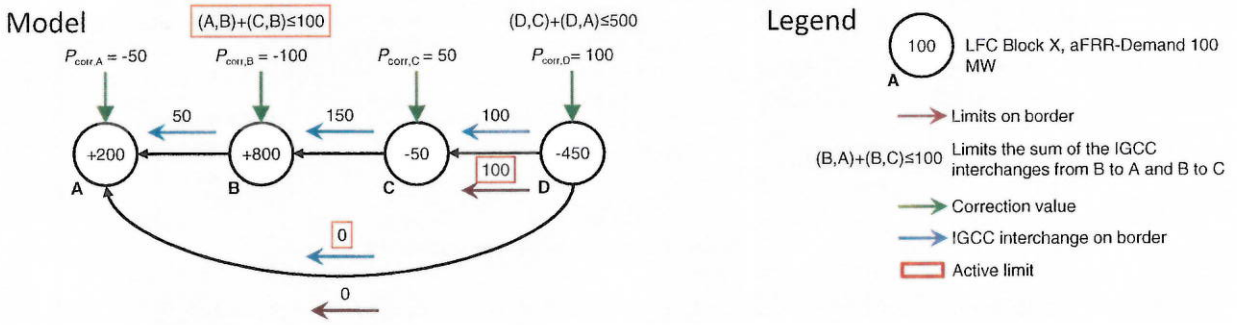


Figure 10. Active profile limitations and active limitations

Figure 11 demonstrates a different configuration of borders where A and D each have three neigbours. There is one active limitation from D to B limiting the respective exchange to 100 MW. Since there are no other limitations or profile-limitations, this limitation has no impact on the overall imports and exports so that the result corresponds to the result in the unrestricted secenario shown in Figure 3.

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-100	-400	50	450
Remaining aFRR-Demand [MW]	200+(-100) = 100	800+(-400) = 400	-50+50 = 0	-450+450 = 0
Deviation from Target [MW]	-100-(-100) = 0	-400-(-400) = 0	50-50 = 0	450-450 = 0
Deviation/aFRR-Demand (Absolute Value) [pu]	| 0/200 |= 0	| 0/800 | = 0	| 0/50 | = 0	| 0/450 | = 0

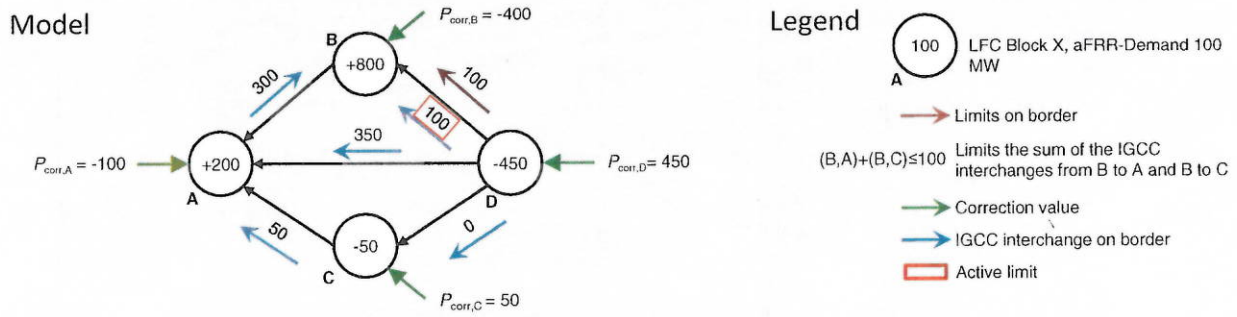


Figure 11. Example for "triangle" configuration (active limitation)

In Figure 12, the import of B is limited by a profile limit to 100 MW. Therefore, the total import potential of A and B is equal to 300 MW which are distributed proportionally to C and D. The limitation from D to B is active but does not limit the overall exchange.

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-200	-100	30	270
Remaining aFRR-Demand [MW]	200+(-200) = 0	800+(-100) = 700	-50+30 = 20	-450+270 = 180
Deviation from Target [MW]	-100-(-200) = 100	-400-(-100) = -300	50-30 = 20	450-270 = 180
Deviation/aFRR-Demand (Absolute Value) [pu]	| 100/200 | = 0.5	| -300/800 | = 0.375	| 20/(-50) | = 0.4	| 180/(-450) | = 0.4

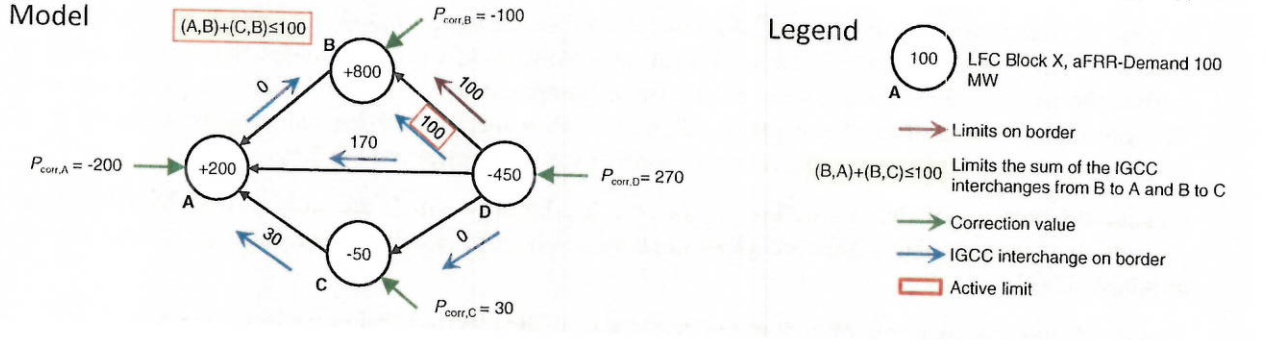


Figure 12. Example for "triangle" configuration (Active limitation and profile limitation)

Figure 13 shows the example with a profile limit of 200 MW applied in the export direction for D. Moreover, the limit from D to B of 100 MW is still active. As a result 250 MW can be exported from C and D to A and B. The impact is distributed proportionally.

LFC Block	A	B	C	D
aFRR-Demand [MW]	200	800	-50	-450
Share of Total Positive Demand [pu]	200/(200+800) = 0.2	800/(200+800) = 0.8	n/a	n/a
Share of Total Negative Demand [pu]	n/a	n/a	-50/(-50+(-450) = 0.1	-450/(-50+(-450) = 0.9
Correction - Optimisation Target [MW]	-0.2·500 = -100	-0.8·500 = -400	0.1·500 = 50	0.9·500 = 450
Correction Value (Optimisation Result) [MW]	-50	-200	50	200
Remaining aFRR-Demand [MW]	200+(-50) = 150	800+(-200) = 600	-50+50 = 0	-450+200 = 250
Deviation from Target [MW]	-100-(-50) = -50	-400-(-200) = -200	50-50 = 0	450-200 = 250
Deviation/Target [pu]	| -50/200 | = 0.4	| -200/800 | = 0.5	| 0/(-50) | = 0	| 250/(-450) | ≈ 0.56

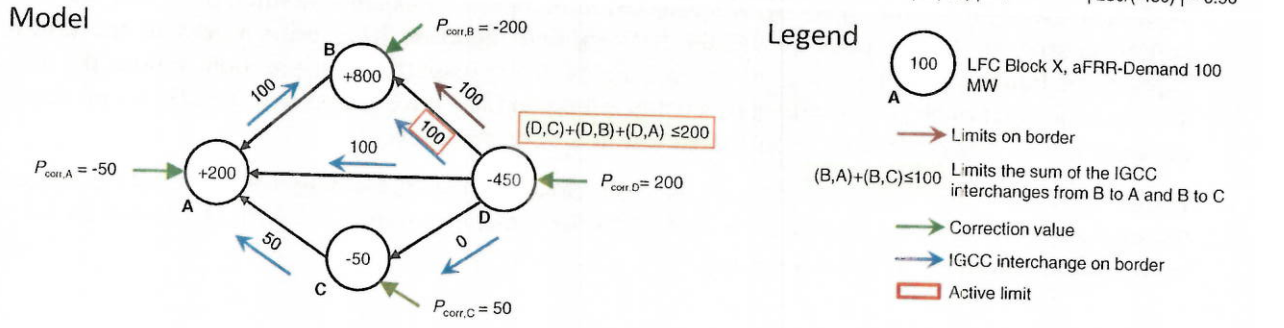


Figure 13. Example for "triangle" configuration (active profile limitation)

6.4 Optimisation regions

Article 11(4) of the INIF details the proposal for the formation of optimisation regions. Optimisation regions allow to have an optimisation of the concerned area prior to the global optimisation of all LFC areas in the last step.

The prior optimisation of a specific region including more than one LFC area or LFC block can be beneficial in the following cases:

a) LFC block;

b) LFC areas or LFC blocks exchanging balancing energy from aFRR based on a common merit order list.

The prior netting of imbalances within a LFC block is in accordance with Article 146(9) of the SOGL.

In case b), when more than one LFC area or LFC block exchange balancing energy from aFRR based on a common merit order list, the prior optimisation within these regions enables the consideration of prices within the prior optimisation which is beneficial compared to a scenario where no prices are considered. The optimal consideration of the prices of the common merit order list can only be ensured by allowing prior access to the respective transmission capacities of the concerned borders.

Concerned borders of the respective region are the borders which are only shared by LFC areas of the respective region. In the sequential global optimization step, all border are considered with the remaining available CZC.

Figure 14 gives an example of concerned borders for TSOs forming an optimisation region.

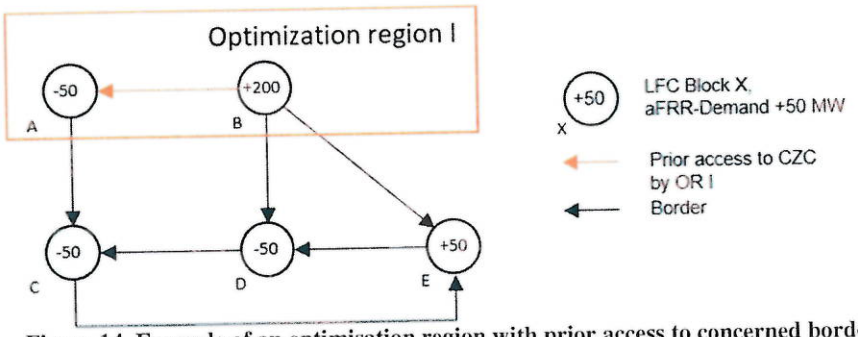


Figure 14. Example of an optimisation region with prior access to concerned borders

If an optimisation region due to TSOs exchanging balancing energy from aFRR exists, all the remaining LFC blocks not being part of the optimisation region of the TSOs exchanging balancing energy from aFRR shall have the right to participate in an optimisation region for imbalance netting, preceding the imbalance netting among all LFC blocks of the IN-Platform and therefore have prior access to the transmission capacity of borders which are shared by two TSOs of the respective optimisation region. By this, every TSO has the right to be part of one optimisation region and has prior access to a specific set of transmission capacities. This rule ensures equal treatment and non-discrimination.

Figure 15 shows a possible example with two LFC areas (A and B) forming one optimisation region due to the exchange of balancing energy from aFRR and the remaining three LFC areas (C, D and E) forming an optimisation region for imbalance netting.

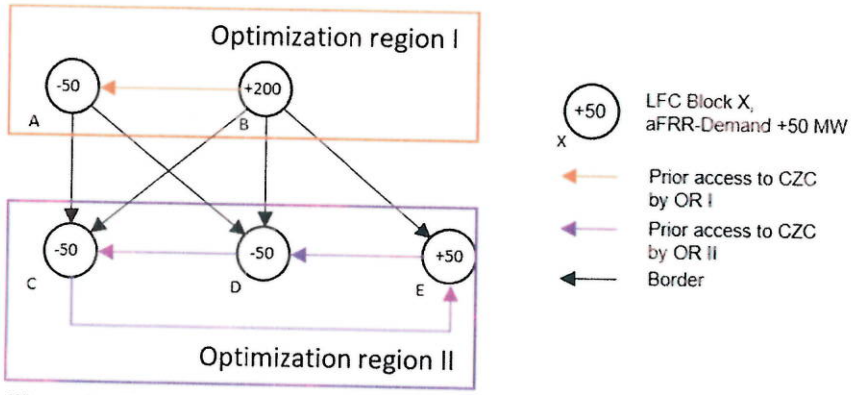


Figure 15. Example of two optimisation regions with prior access to concerned borders

In the first optimisation step, the optimisation region I (A and B) and optimisation region II (C,D, and E) are optimised in parallel. A and B have prior access to the transmission capacity on the border b_{AB}. C, D and E have prior access to the transmission capacities b_{CD}, b_{CE} and b_{DE}. The transmission capacities b_{AC}, b_{AD}, b_{BC}, b_{BD} and b_{BE} are only used in the second optimisation step, the "global" optimisation step.

In the global optimisation step, the resulting aFRR demands and updated CZC of the first optimisation steps are used.

The formation of optimisation regions does not have an impact on the global netting volume. But it might have an impact on the distribution of the netting volume amongst all participating TSOs.

However, all TSOs consider the implicit usage of prices for TSOs exchanging balancing energy of aFRR based on a common merit order list and by this the optimal usage of the available CZC as beneficial for the efficiency of the European balancing market. By usage of prices for TSOs where comparable prices are available, for example in case of a common merit order list, the proposal ensures that the most expensive bids in this region are netted. Hence, based on the available information, the most efficient netting of imbalances is performed, however deviating in this region from the proportional distribution of netting potential. In case the geographical region of the aFRR-Platform matches the geographical region of the IN-Platform, the IN-Platform itself is no longer needed, as explained in Subchapter 6.1. The aFRR-Platform will perform an implicit imbalance netting under consideration of aFRR bid prices of the common merit order list. Numerical examples

Figure 16 demonstrates a configuration with two optimisation regions: one optimisation region based on an aFRR cooperation including B and C ("optimisation region 1") and one optimisation region between A and D ("optimisation region 2"). There is no active limitation in this example. The example in Figure 14 considers the common merit order list of the aFRR cooperation illustrated in Figure 16 for the positive aFRR activation.

Position in CMOL	LFC Block B	LFC Block C
1	50	-
2	-	150

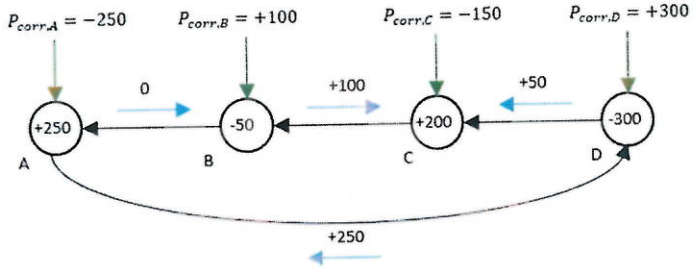
Figure 16. Common merit order list for the aFRR cooperation between LFC blocks B and C

Figure 17 shows an positive aFRR demand in A and C and a negative aFRR demand in B and D. The two optimisation regions are optimised in a first step. B and C perform, as an aFRR cooperation, implicit netting of 50 MW and due to the CMOL an additional exchange of 50 MW of aFRR from B to C. B provides 50 MW of aFRR towards C. In parallel, the optimisation region 2 performs implicit netting of 250 MW based on their aFRR demands. Each optimisation region has prior access to the transfer capacity being within the optimisation region, i.e.: only on the common borders of the TSOs in the same optimisation region. The optimisation region 1 has prior access to the transfer capacity B-C and the optimisation region 2

has prior access to the transfer capacity A-D. Transfer capacities A-B and C-D are only considered in the second optimisation step. In the second optimisation step, all LFC blocks perform netting in one layer. In this layer the remaining aFRR demands from the optimisation region 1 are netted with the remaining aFRR demands from the optimisation region 2 considering the result of the aFRR cooperation. By this, the most expensive bids of the aFRR cooperation are netted. In this example, 50 MW between LFC block C and D are netted in the last optimisation step leading to a remaining aFRR activation of 50 MW in B and C. The total netting volume of 350 MW is independent from the configuration of optimisation regions.

LFC Block		A	B	C	D
Optimization Region		1	aFRR cooperation	aFRR cooperation	1
aFRR-demand [MW]	[MW]	+250	-50	+200	-300
Correction Value (Optimization Result) First optimization step	[MW]	-250	+100	-100	+250
			Exchange of aFRR + implicit prenetting		
Remaining imbalance after first optimization step	[MW]	0	+50	+100	-50
Correction Value (Optimization Result) Second optimization step	[MW]	0	0	-50	+50
Remaining aFRR-Demand	[MW]	0	+50	+50	0

Model



Legend

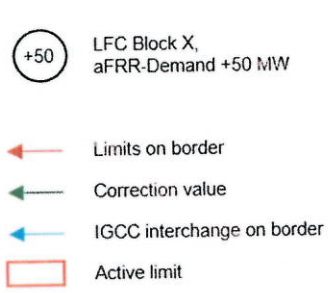


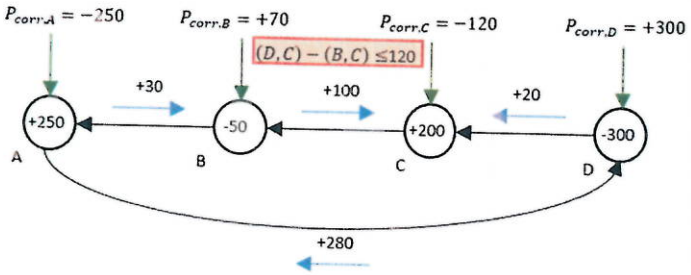
Figure 17. Example for optimisation regions without limitation

In Figure 18, the same configuration as in the example in Figure 17. Example for optimisation regions without limitation

applies. Additionally, the import of LFC block C is limited to a value of 120 MW. Hence, as LFC block C is part of the aFRR cooperation, the optimisation region 1 has prior access to the capacity B-C. The optimisation result of the first optimisation step remains unchanged. For the second optimisation step, only 20 MW of the import possibility of LFC block C remains. Thus, only 20 MW can be netted between LFC block C and D. The remaining 30 MW are netted between B and D.

LFC Block		A	B	C	D
Optimization Region		1	aFRR cooperation	aFRR cooperation	1
aFRR-demand [MW]	[MW]	+250	-50	+200	-300
Correction Value (Optimization Result) First optimization step	[MW]	-250	+100	-100	+250
Remaining imbalance after first optimization step	[MW]	0	Exchange of aFRR + implicit prenetting		
			+50	+100	-50
Correction Value (Optimization Result) Second optimization step	[MW]	0	-30	-20	+50
Remaining aFRR-Demand	[MW]	0	+20	+80	0

Model



Legend

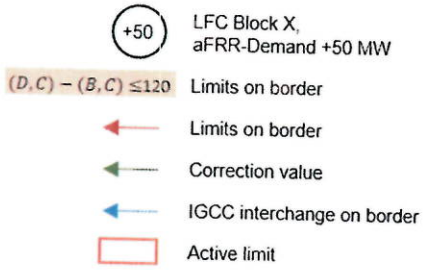


Figure 18. Example for optimisation regions with limitation

7 Publication of information and reporting

Pursuant to Article 12 of EBGL, there is no specific requirement to publish the intended exchanges of energy as a result of the imbalance netting process. However, TSOs plan to keep the current practice of publishing this information and to continue publishing the social welfare reports on the ENTSO-E website[5].

In accordance with Article 12(3)(k) of EBGL, in case there is any amendment of the algorithm of the imbalance netting process function, the requirements shall be published at least one month before the application.

Considering Article 12(3)(l) and Article 59(3) of EBGL, ENTSO-E shall publish a European report which, amongst others, shall describe the status of implementation projects and also assess the compatibility between the implementation projects. These reports shall be published online.

[5] https://www.entsoe.eu/network_codes/eb/imbalance-netting/