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ENTSO-E Load Frequency Control & Reserves Network Code

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EURELECTRIC response to the ENTSO-E Load Frequency Control & Reserves Network Code

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SG Balancing & Intra-day
Ruud OTTER (NL), Chair
Javier ALONSO PEREZ (ES), Pierre CASTAGNE (FR), Egil ERIKSSON (FI), Nigel HAWKINS (IT), Nicolas KUEN (BE), Daniel NORDGREN (SE), Radoslav SOKOL (CZ), Marcel STEINBACH (DE), Lasse SUNDAHL (DK), Esther SUTTON (GB), Markus WATSCHER (AT), Hans Olav WEEN (NO)

Olga MIKHAILOVA (EURELECTRIC Secretariat)

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Niina HONKASALO (EURELECTRIC Secretariat)

Contact:
Niina HONKASALO – nhonkasalo@eurelectric.org
Pavla MANDATOVA – pmandatova@eurelectric.org
Olga MIKHAILOVA – omikhailova@eurelectric.org

PROPER REGULATORY OVERSIGHT AND TRANSPARENCY OF TSO LFC ACTIVITIES SHOULD BE ENSURED

The regulatory approval process is not described in the code in a sufficiently transparent way. The article 1.3.3 should be brought in line with the corresponding article in the other network codes (CACM NC, OS NC and OPS NC). Transparency in the regulatory approval and stakeholder consultation is key for market participants. Therefore the regulatory approval article should include a list of articles of the code to be subject to NRA approval, to be subject to public consultation and subject to cost-benefit analysis.

Among the issues to be made subject to regulatory approval, stakeholder consultation, and publicly available are the following:

- Frequency Quality Defining Parameters, and related multi-party TSO agreements (2.10.2)
- Frequency Restoration Control Error Target Parameters, and related multi-party TSO agreements (2.10.4)
- Common methodology to assess the risk and the evolution of the risk of FCR Exhaustion in a Synchronous Area (2.12.3)
- Appointment of a TSO as LFC Block Monitor for a LFC Block, and a related multi-party TSO agreement (2.14.1, 3.20.6)
- Appointment of a TSO as responsible for the implementation and operation of the Frequency Restoration Process, and related multi-party TSO agreement (3.20.7)
- Allocation of responsibilities of TSOs within the Monitoring Area/LFC Area/ LFC Block/Synchronous Area, and related multi-party TSO agreements (3.18.7)
- Set point value for automated/manual FRR activation(3.20.4, 3.20.5)
- Set point value for Frequency Restoration Process (3.21.2)
- Imbalance Netting Process and related multi-party TSO agreements (3.22.9)
- Design of cross-border FRR activation process
- Defining dimensioning approach for FCR to allow that FCR Capacity shall cover at least the Reference Incident (4.27.5)
- Allocation of responsibilities of TSOs within the LFC Block regarding FRR Dimensioning Rules, and related multi-party TSO agreements (5.30.3)
- Defining reasonable limits for changes in active power production or consumption of generating and demand facilities (5.32.5)
- RR dimensioning rules, and related multi-party TSO agreements (6.33.6)
- Introducing additional requirements for RR Providing Groups (6.34.3)
- Common threshold for the impact of the exchange of FCR obligation on the cross-border flows in case of FCR activation (7.35.4)
- Allocation of responsibilities for ensuring before real-time the availability of sufficient transmission capacity to exchange FRR/RR (7.37.2)
- Rules and minimum requirements for exchange of FCR between Synchronous Areas, and related multi-party TSO agreements (7.44.3)
- Exchange of FRR, and related multi-party TSO agreements (7.46.3)

We also call for more regulatory certainty of the code. Therefore we suggest removing the right for TSOs to amend definitions of the Quality Target Parameters (2.8.1), which would imply too much freedom for TSOs in ensuring appropriate level of load frequency control quality.

The following additional information should be made public:

- Ex-post quality monitoring of the Frequency Restoration Control Error calculation

In addition, all the information should be published only once one ENTSO-E transparency platform (Chapter 10). Information about the rules and procedures should be published well in advance of the start of the operation, 6 months instead of 1 month proposed in the code. (10.55.1, 10.56, 10.57, 10.58). Finally, all the information on FCR, FRR and RR exchange should be published in accordance to the national regulations and on the ENTSO-E website.

Values/Figures in the code should be better explained and clearly justified

The code lacks justification and explanations of the values/figures of various parameters (2.9.4, 5.30, 5.31,) and methodologies (2.12.3). Furthermore, some data remains to be filled in and timing for this should also be clarified. It is unacceptable to have a consultation on a code where essential figures are still missing. We believe that ENTSO-E has to make at least a second round of consultation for the missing set of figures.

The figure of 25% of the Reference Incident of the Synchronous Area has to be clarified (5.32).

TSO interference into the market should be limited

In the situation when Frequency Restoration Control Error Target Parameters are not met, the TSOs should not be given a right to impose arbitrary restrictions on market participants unless it is an Operational Security issue, and then this case should be treated in the OP NC and the Emergency NC. (2.15.2, 2.15.3)

The code should not include provisions allowing for restriction of cross-border exchanges (Whereas (14).

In the situation when TSOs should perform predefined additional actions to actively reduce the Frequency Restoration Control Error, they should use bids available on balancing market, and not directly interfere in power production (5.32.5).

Objectives of the code should be limited to technical aspects of maintaining frequency quality in the system. Market aspects should be out of scope of this code.

The principle of optimization between the highest overall efficiency and lowest total cost for all involved parties (1.3.1; 1.3.2) is not clearly described in the code. In our view, it should not be at all included in this code (7.50) and be made part of the Electricity Balancing NC. More specifically, “economic optimization” should not be the objective for using Replacement Reserves (RR) (Whereas..(8)) as this will prompt TSOs to use these reserves in the pre gate closure phase. The

optimization should be done by the market and TSOs should use RR only to restore available reserves.

We want to stress that this code should aim at giving TSOs the incentives to facilitate an efficient utilization of resources by establishing markets and market mechanisms. This code should primarily define the technical standards that will allow the TSOs to ensure secure operation. The standards should be subject to a cost-benefit analysis. (1.1.2)

Regarding the recovery of costs (1.4.1), costs incurred by all regulated Network Operators, not only by TSO as proposed in the code, shall be assessed by National Regulatory Authorities, as foreseen in the RfG, DCC and OPS codes.

The code should be more restrictive for TSOs

In our view, the code should be written in a more restrictive manner, meaning that such formulations, like “best endeavors”, “loyal cooperation” “very unlikely” etc. should be removed and the requirements upon TSOs to respect the rules of the code should be more straightforward.

The requirements on time periods necessary for TSOs to accomplish various tasks should be made more precise. Formulations like “without undue delay” should be avoided. For example, processing of the application from a FCR Provider should be done within 3 months (4.28.4).

We also regret that the code does not set any ambition to review the definitions (delimitations) of LFC Areas, LFC Blocks, etc. as it is the case in the CACM Network Code where a whole process to review the size of Bidding Zones is provided.

Certain technical requirements to providers of FCR should be revised

The code should foresee alternative mechanisms to safeguard the current arrangements with reserve providers for the monitoring and managing of reserves. More generally, the retroactive application of technical requirements within this NC should be carefully defined via a cost-benefit analysis with regulatory oversight (see RfG NC).

Furthermore, the code includes a number of requirements that are technically not possible to respect for FCR providers, including for example, time-stamped instantaneous active power without FCR activation (4.28.9).

Real-time information of the drop of governor (4.28.9) or appropriate measures to ensure recovery of energy reservoirs (4.29.6) could not be achievable and/or not linked to financial compensation for existing providers.

Many technical requirements are not yet provided by the code, as, for example, the required ramp rate under article 31.2.d for FRR. Moreover, the code does not contain a derogation or a derogation process for existing power plants that might be prequalified under current practices, but might no longer be prequalified when this network code enters into force.

Role of the DSO

Operational security in distribution networks should not be put in question when reserves are provided to the TSO from the users connected to distribution networks. Current redaction of draft network code load frequency control and reserves (LFCR) entitles DSOs to evaluate the provision of the service in a pre-qualification stage, considering the worst condition of its network and the most unfavorable provision for the distribution grid (Chapter 9). The DSO should have the right to prevent the provision of the service if secure operation of their network is endangered also closer to the real-time.

Reserve providing units might be connected to a local DSO (e.g. a municipal utility). Such a DSO might not be directly connected to the TSO - another, major DSO, might be present 'in the middle'. In such a case, the major DSO has to be also respected in the process of prequalification as congestions in the major DSO's grid may arise prohibiting reserve provision. The current draft of the LFCR network code does not reflect such situations.

Furthermore, it must be ensured that DSO receives all information necessary for secure operation of its grid. All real time communication channels should be described in NC OS which is 'the umbrella code' on system operation and should not be duplicated.

Interaction with other network codes should be clarified

NC Balancing

A number of concepts, definitions and rules included in the code should be made part of the Balancing NC. The issues to be excluded include the following:

- The process of imbalance netting (Whereas..(14))
- Ancillary services (2.15.1).
- Available Transmission Capacity (3.22.6, 3.23.5, 7.38.3)

The reference to the NC Balancing should be made with regard to:

- Common rules for the operation for the FRPs (5.32.5)
- Process of contracting and procuring of reserves (FRR,RR) (6.33.3, 6.33.5, 6.34.1)

NC Emergency

A number of provisions included in the code should be made part of the NC Emergency, including the following:

- Fall back mechanism for the cross-Border FRR Activation Process (3.23.7)
- Fall back mechanism for the cross-Border RR Activation Process (3.24.7)

The reference to the NC Emergency should be made with regard to:

- "predefined coordinated actions of LFC Blocks" in case of Elevated/High Synchronous Area State (5.32.4)

NC Operational Security

A number of provisions included in the code should refer and be in line with the NC OS, including the following:

- Reference to the definition of Area risk level (included in the NC OS) should be introduced
- Real time communication channels

Competition Law

The reference to market participant's behavior should be removed from the code as this is in the remit of Competition Law (2.15).

Quality of definitions should be improved

In our view, a number of definitions should be better specified in the code (e.g. Providers -> Balancing service providers; Available Transmission Capacity (ATC) -> Physical Available Cross-border Capacity).

Some definitions like e.g. FCR Capacity; FCR Exhaustion; Network Splitting; System Imbalances; Load, Generation ad HVDC behaviour, Virtual-Tie Line, K-Factor, FRR Capacity, Automatic FRR Full Activation Time, Threshold, should be included in the code. We also want to stress the need for better consistency between the definitions in the code, e.g. RR definition should be aligned with FCR and FRR definitions (1.2), FCR definition should be the same in all articles (4.27.5), FCR provider definition should be consistent with the definition of FCR Providing Unit (4.29.4).

Furthermore, there should be better consistency between this code and other code in terms of definitions. E.g.: Area State is already defined in the OS NC and thus should not be included here; Northern Area should be replaced by Nordic Area, defined already in the RfG NC.

In particular, we believe that the "mitigation procedures" under article 15 are too widely drafted, powers of TSOs (albeit under scrutiny of article 3.3) should be strongly limited as we propose in concrete amendments.

Further editing of the code is needed

We have noted that the current draft of the code contains a number of typos and errors that have to be removed. E.g.: 2.9.1; 2.10.1; 2.10.2, 3.22.1, 3.22.3, 3.24.1(3), 5.30.2, 6.34.3, 7.46.2.

MARKETS COMMENTS

Title	Art.	Para	Initial version	Proposed version	Justification text
Whereas			(8) In terms of LFC structure and operational rules, this Network Code introduces rules regarding FCR, FRR and RR control processes that shall set a basis for an efficient and effective Load-Frequency Control in the European Union. FCR shall aim at containing the frequency drop after an incident within a pre-defined range. FRR shall aim at restoring the frequency to its Nominal Frequency of 50 Hz. RR replace the activated reserves to restore the available reserves in the system or for economic optimisation;	In terms of LFC structure and operational rules, this Network Code introduces rules regarding FCR, FRR and RR control processes that shall set a basis for an efficient and effective Load-Frequency Control in the European Union. FCR shall aim at containing the frequency drop after an incident within a pre-defined range. FRR shall aim at restoring the frequency to its Nominal Frequency of 50 Hz ***and, where necessary, restoring power balance on borders to the scheduled valu***e . RR replace the activated reserves to restore the available reserves in the system	"Economic optimization" should not be the objective for using Replacement Reserves (RR) as this will prompt TSOs to use these reserves in the pre gate closure phase. The optimization should be done by the market and TSOs should use RR only to restore available reserves. This code should not aim at efficient utilization of resources as it is up to the market and market participants to ensure economic efficiency
Whereas			(14) The efficiency of load-frequency control shall be enhanced by cross-border exchange, sharing and activation of reserves and imbalance netting. This exchange relates to the FCP, the FRP, and the RRP **as well as to the Imbalance Netting Process**. The cross-border exchange shall be treated within a Synchronous Area or between Synchronous Areas. **The Network Code shall establish restrictions to the cross-border exchanges where needed from a technical point of view.**	The efficiency of load-frequency control shall be enhanced by cross-border exchange, sharing and activation of reserve. This exchange relates to the FCP, the FRP, and the RRP. The cross-border exchange shall be treated within a Synchronous Area or between Synchronous Areas.	Unbalancing netting should be dealt with in the balancing code. Also, restrictions of cross-border exchanges cannot be an objective of this code.
Chapter 1 - General Provisions					
1	1	1	This Network Code defines the requirements and principles for load-frequency control and reserves applicable to all TSOs, Reserve Connecting DSOs and Providers.	This Network Code defines the requirements and principles for load-frequency control and reserves applicable to all TSOs, Reserve Connecting DSOs and **Balancing Service Providers.**	The article should be more specific.

1	1	2	This Network Code aims at: a) achieving and maintaining a satisfactory level of frequency quality **and efficient utilisation of the power system and resources;** b) ensuring coherent and coordinated behaviour of the transmission networks and power systems in real-time operation; c) determining common requirements and principles for FCR, FRR and RR; determining common requirements for cross-border exchange, sharing and activation of reserves	This Network Code aims at: a) achieving and maintaining a satisfactory level of frequency quality; b) ensuring coherent and coordinated behaviour of the transmission networks and power systems in real-time operation; c) determining common requirements and principles for FCR, FRR and RR; determining common requirements for cross-border exchange, sharing and activation of reserves	The Network Code should aim at giving TSOs the incentives to facilitate an efficient utilization of resources by establishing markets and market mechanisms. This code should primarily define the technical standards that will allow the TSOs to ensure secure operation. The standards should be subject to a cost-benefit analysis.
1	2		Available Transmission Capacity (ATC) means the transmission capacity which can be used for Imbalance Netting Power, Frequency Restoration Power and Replacement Power interchange without endangering the Operational Security;	**Physical Available Cross-Border Capacity** means the transmission capacity which can be used for Imbalance Netting Power, Frequency Restoration Power and Replacement Power interchange without endangering the Operational Security;	Available Transmission Capacity (ATC) name is confusing with the current commercial Available Transmission Capacity (ATC) name. We would prefer to refer to another term.
1	2		FCR Capacity	FCR Capacity shall cover not more than the Reference Incident of the Synchronous area	No definition of FCR Capacity whereas it is used in Article 27 §1
1	2		FCR Exhaustion	to be defined	No definition of FCR Exhaustion whereas it is used in Article 12 §3
1	2		Network Splitting	to be defined	No definition of Network Splitting whereas it is used in Article 35 §2
1	2		System Imbalances	to be defined	No definition of System Imbalances whereas it is used in Article 33 §3
1	2		Normal Synchronous Area State means the Synchronous Area alert state; active if neither Elevated Synchronous Area State nor High Synchronous Area State are active;	**Primary SA alert state means the SA Alert State active if neither Elevated Synchronous Area State nor High Synchronous Area State are active;**	For a SA, Alert state is divided into 3 categories : a) Primary alert state : active if neither Elevated SA alert state nor High SA alert state are active; b) High SA alert state; c) Elevated SA alert state. The same name can't be used to design the general alert state for a SA and the first step of this alert state.

1	2		Virtual Tie Line	Replace by **Physical Tie Line**	The original definition could lead to the understanding that cross border capacity is reserved.
1	2		Provider means an entity operating a Reserve Providing Unit or a Reserve Providing Group;	Balancing Services Provider (BSP) means an entity **providing FCR, FRR or RR, or balancing energy, to the system operator**	Definition should be more specific and consistent with the network code on Electricity Balancing.
1	2		Replacement Reserves (RR) means the reserves used to restore/support the required level of FRR to be prepared for further system imbalances. **This category includes operating reserves with activation time from Time to Restore Frequency up to hours;**	Replacement Reserves (RR) means the reserves used to restore/support the required level of FRR to be prepared for further system imbalances.	The RR definition must be consistent with FCR and FRR definitions. Timing should be defined within the code under the appropriate chapter. Moreover, we do not agree with products that can last for "hours", this should normally be provided via the intraday market !
1	2		Synchronous Area means an area covered by interconnected TSOs with a common System Frequency in a steady operational state such as the Synchronous Areas Continental Europe (CE), Cyprus (CY), Great Britain (GB), Ireland (IRE) and Northern Europe (NE) and the power systems of Lithuania, Latvia and Estonia (Baltic) as a part of a synchronous area;	Synchronous Area means an area covered by interconnected TSOs with a common System Frequency in a steady operational state such as the Synchronous Areas Continental Europe (CE), Cyprus (CY), Great Britain (GB), Ireland (IRE) and Nordic Area **(Nordic)** and the power systems of Lithuania, Latvia and Estonia (Baltic) as a part of a synchronous area;	As established in the System Operations Committee, this committee has 5 permanent regional groups based on the synchronous areas (Continental Europe, Nordic , Baltic, Great Britain, and Ireland-Northern Ireland), and 2 voluntary Regional Groups (Northern Europe and Isolated Systems). Therefore,the term Northern Europe (NE) should be consistent with the term Nordic Area in order to avoid confusion between the permanent and the voluntary Regional Group and also, to remain used in the code on requirements for grid generators
1	3	1	The requirements established in this Network Code and their applications are based on the principle of non-discrimination and transparency **as well as the principle of optimisation between the highest overall efficiency and lowest total cost for all involved parties.**	The requirements established in this Network Code and their applications are based on the principle of non-discrimination and transparency.	The principle of optimisation is neither described neither defined in the network code. It should be part of the network code on Electricity Balancing.
1	3	2	Notwithstanding the above, the application of the principle of non-discrimination and the principle of optimisation between the highest overall efficiency and lowest total costs while maintaining Operational Security as the highest priority for all involved parties shall be balanced with the aim of achieving the maximum transparency in issues of interest for the market and the assignment to the real originator of the costs.	Notwithstanding the above, the application of the principle of non-discrimination **shall be balanced with the aim of achieving the maximum transparency in issues of interest for the market and the assignment to the real originator of the costs.**	The principle of optimisation is neither described neither defined in the network code. It should be part of the network code on Electricity Balancing.

1	3	3	Where reference is made to this paragraph, the TSO shall, after consultation with its national regulatory authority, establish the terms and conditions or actions necessary to ensure Operational Security in accordance with the principles of transparency, proportionality and non-discrimination. The establishment of these terms and conditions or actions necessary to ensure Operational Security shall be performed in compliance with and respecting the TSO's responsibility to ensure system security according to national legislation.	**1. The items specified in paragraphs [ ] shall be treated in a manner consistent with Article 37 of Directive 2009/72/EC. 2. The following shall be subject to approval by all NRAs: - Article 9 §4; - Article 15 §2 and §3; - Article 16- Article 18 §5; - Article 27 §1, §4, §5, §8; - Article 28 §2 - Article 30 §1 and §4; - Article 31 §1, §2- Article 32 §4 and §5; - Article 33 §1 and §5- Article 34 §1 and §2; - Article 35 §2 and §4- Article 37 §6; - Article 41 §3; - Article 42 §2- Article 45 §3; - Article 50 §2; - Article 52 §2- Article 50 §2** **2. The following shall be subject to public consultation: Article X- Article XX...3. The following Cost-Benefit Analysis (CBA) should be performed:- Article X- Article XX- ...** **4, In the event that concerned National Regulatory Authorities require an amendment to the proposed procedure for Operational Security, System Operators shall resubmit an amended procedure for approval within three months. 5. Where the concerned National Regulatory Authorities have not been able to reach an agreement within a period of six months from when the case was referred to the last of those National Regulatory Authorities, or upon a joint request from the competent National Regulatory Authorities, the Agency shall decide upon those regulatory issues that fall within the competence of National Regulatory Authorities as specified under Article 8 of Regulation (EC) No 713/2009. 6. System Operators, as the case may be, shall implement the decision of National Regulatory Authorities by a date no later than the date specified in the decision.**	Article 3 §3 on regulatory approvals should follow the same structure as the article on regulatory approvals in the network code on Capacity Allocation, Congestion Management, NC OS and OPS. Transparency in the regulatory approvals is key for market participants. Also add a paragraph with articles subject to public consultation and cost-benefit analysis (CBA) to be done. The list of articles mentioned in the amendment is not exhaustive.

1	6	1	No later than 12 months after entering into force of this Network Code all TSOs except the TSOs of the power systems of Lithuania, Latvia and Estonia within a Synchronous Area shall implement a Synchronous Area Agreement to ensure, that TSOs with no legal obligation to respect this Network Code, belonging to the Synchronous Area, also cooperate to fulfil the requirements.	Delete	Article 6 is not legally binding
1	6	2	No later than 12 months after entering into force of this Network Code the TSOs of the power systems of Lithuania, Latvia and Estonia shall endeavour to implement a Synchronous Area Agreement including the requirements of this NC.	Delete	Article 6 is not legally binding
1	7	1	Where the TSOs of a Synchronous Area are required to adopt a decision in accordance with this Network Code, all TSOs of a Synchronous Area shall cooperate loyally to adopt the decision.	Where the TSOs of a Synchronous Area are required to adopt a decision in accordance with this Network Code, all TSOs of a Synchronous Area shall **adopt the decision.**	The adoption of the decision need to be more binding. Impossible to assess "loyally cooperation".
1	7	2	Where the TSOs of a Synchronous Area are required to adopt a decision in accordance with this Network Code, ENTSO-E shall facilitate the adoption of decisions.	delete	Reference to changes made in article 7 §1. If accepted, then TSOs shall adopt the decision. The network code is legally binding.
Chapter 2 - Frequency Quality					
2	8	1	All TSOs of a Synchronous Area shall define or amend the definition of: a) the Frequency Quality Target Parameters and the Frequency Quality Defining Parameters in accordance with Article 9; b) the Frequency Restoration Control Error Target Parameters and the Frequency Restoration Control Error Defining Parameters for each LFC Block in accordance with Article 10; c) the Data Collection and Delivery Process in accordance with Article 11; d) the Criteria Application Process in accordance with Article 12; e) the Frequency Quality Evaluation Criteria in accordance with Article 12; and f) the publication of results in accordance with Chapter 10.	**The following Quality Target Parameters shall be defined:** a) the Frequency Quality Target Parameters and the Frequency Quality Defining Parameters in accordance with Article 9; b) the Frequency Restoration Control Error Target Parameters and the Frequency Restoration Control Error Defining Parameters for each LFC Block in accordance with Article 10; c) the Data Collection and Delivery Process in accordance with Article 11; d) the Criteria Application Process in accordance with Article 12; e) the Frequency Quality Evaluation Criteria in accordance with Article 12; and f) the publication of results in accordance with Chapter 10.	The wording "TSO shall define or amend" should be rephrased, in order to avoid uncertainty (regulatory, economical or technical) for all involved stakeholders.

2	9	1	TSOs of a Synchronous Area shall use the following Frequency Quality Defining Parameters: a) Nominal Frequency b) Standard Frequency Range; c) Maximum Instantaneous Frequency Deviation; d) Maximum Steady-State Frequency Deviation; e) Time to Restore Frequency; and f) Time to Recover Frequency; and g) Frequency Range within Time to Restore Frequency	TSOs of a Synchronous Area shall use the following Frequency Quality Defining Parameters: a) Nominal Frequency b) Standard Frequency Range; c) Maximum Instantaneous Frequency Deviation; d) Maximum Steady-State Frequency Deviation; e) **Frequency Standard Deviation:** f) Time to Recover Frequency; and g) Frequency Range within Time to Restore Frequency	Add Frequency Standard Deviation because it is a very strong parameter to assess the frequency. Then, definition for Table 2 for CE does not make sense. Moreover article 12 §2 a) ii) provides to have this paramter monitored.
2	9	2	TSOs of a Synchronous Area shall use the Frequency Quality Defining Parameters listed in (1) whose corresponding values are in Table 1.	TSOs of a Synchronous Area shall use the Frequency Quality Defining Parameters listed in (1) whose corresponding values are in Table 1, **while respecting the provisions of Article 3(3).**	Data in table 1 should be approved by National Regulatory Authorities. Once the NC is approved, these values do not need to be approved again by NRAs
2	9	2	Table 1: Frequency Quality Target Parameters	TSOs of a Synchronous Area shall use the following Frequency Quality Defining Parameters: a) Nominal Frequency b) Standard Frequency Range; c) Maximum Instantaneous Frequency Deviation; d) Maximum Steady-State Frequency Deviation; e) Frequency Standard Deviation: f) Time to Recover Frequency; and g) Frequency Range within Time to Restore Frequency h) **Maximum Frequency Standard Deviation**	Maximum Frequency Standard Deviation should be included in table 1.
2	9	2	Table 1: Frequency Quality Target Parameters	**c) Maximum Instantaneous Frequency Deviation for NE should be set to 1000 MHz**	Setting this parameter to 800 MHz would lead to great challenges. The level of 1000 MHz is the current practice. Same sort of rationality check could be useful for other values in the table as well.

2	9	4	While respecting the provisions of Article 3(3), the TSOs of a Synchronous Area shall agree on a common proposal for setting or changing the value of each Frequency Quality Defining Parameter and each Frequency Quality Target Parameters at least every five years taking into account factors including, but not limited to: a) size of consumption and of generation of the Synchronous Area and inertia of the Synchronous Area; b) grid structure and/or network topology; and c) load and generation behaviour d) For all Synchronous Areas except the Synchronous Areas IRE and GB: results of probabilistic simulations considering that it is only admissible having an event probability of one in twenty years in which there is a large-scale incident in the Synchronous Area due to lack of FCR.	While respecting the provisions of Article 3(3) a**nd the Network Code CACM,** the TSOs of a Synchronous Area **can initiate an cost-benefit assessment for the amendment of the provisions set out in this article based on a methodology which will take** into account factors including, but not limited to: a) size of consumption and of generation of the Synchronous Area and inertia of the Synchronous Area; b) grid structure and/or network topology; and c) load and generation behaviour d) **Delete**	Proposed wording is more balanced and eliminate the risk of unilateral decision in changing parameters. Term "behaviour" not defined in the definitions of the network code. Amendment process also needs to be in line with the CACM process and have regulatory scrutiny. d) Frequency quality target parameters should not refer to FCR dimensioning.
2	10	1	The TSOs of a Synchronous Area shall define and use the following Frequency Restoration Control Error Defining Parameters for each LFC Block of a Synchronous Area for the next year with the goal of respecting the provisions of 0: a) Level 1 Frequency Restoration Control Error Range and b) Level 2 Frequency Restoration Control Error Range ; The TSOs of a Synchronous Area with more than one LFC Block shall ensure that the Level 1 Frequency Restoration Control Error Ranges and the Level 2 Frequency Restoration Control Error Ranges of the LFC Blocks of this Synchronous Area are proportional to the square root of the Initial FCR Obligations of the LFC Blocks.	1. The TSOs of a Synchronous Area shall define**, make publicly available on ENTSO-E website** and use the following Frequency Restoration Control Error Target Parameters for each LFC Block of a Synchronous Area for the next year with the goal of respecting the provisions of article 10 §3 a) and b): a) Level 1 Frequency Restoration Control Error Range and b) Level 2 Frequency Restoration Control Error Range ; The TSOs of a Synchronous Area with more than one LFC Block shall ensure that the Level 1 Frequency Restoration Control Error Ranges and the Level 2 Frequency Restoration Control Error Ranges of the LFC Blocks of this Synchronous Area are proportional to the square root of the Initial FCR Obligations of the LFC Blocks.	Typo Error and link to below paragraphs + requirement of transparency

2	10	2	The TSOs of a Synchronous Area shall agree on setting the value of the Frequency Quality Target Parameters for each LFC Block of the Synchronous Area at least every year.	The TSOs of a Synchronous Area shall agree on setting the value **of the Frequency Restoration Control Error** Target Parameters for each LFC Block of the Synchronous Area at least every year, **while respecting the provisions of Article 3(3)"**	Typo Error. NRA approval is needed and the process should be made coherent to allow NRAs sufficient time to agree
2	10	4	Where a Control Block consists of more than one LFC Area, all TSOs of the LFC Block shall define in a TSO multi-party agreement the **Frequency Restoration Control Error Defining Parameters** and Frequency Restoration Control Error Target Parameters for each LFC Area complying with Article 10(1) and Article 10(2).	Where a LFC Control Block consists of more than one LFC Area, all TSOs of the LFC Block shall define **in a publicly available** TSO multi-party agreement the Frequency Restoration Control Error Target Parameters for each LFC Area complying with Article 10(1) and Article 10(2).	Control Block is not defined in the code. It would be better to replace it by LFC Control Block in order to be consistent. Also multi-party agreement should be publicly available and under NRA approval and market parties consultation. Finally typo error on Frequency Restoration Control Error Defining Prameters
2	12	3	The TSOs of a Synchronous Area shall define in a Synchronous Area Agreement a common methodology to assess the risk and the evolution of the risk of FCR Exhaustion of the Synchronous Area. This methodology shall be performed at least on an annual basis and shall be based at least on historical System Frequency data. The TSOs of a Synchronous Area shall provide the required input data for this analysis.	**While respecting the provisions of Article 3(3)**, the TSOs of a Synchronous Area shall define in a Synchronous Area Agreement a common methodology to assess the risk and the evolution of the risk of FCR Exhaustion of the Synchronous Area. This methodology shall be performed at least on an annual basis and shall be based at least on historical System Frequency data. The TSOs of a Synchronous Area shall provide the required input data for this analysis.	Common methodology should be publicly available and under NRA approval and market parties consultation. FCR Exhaustion needs to be defined (see amendments to the article 2)
2	13	1	All TSOs of a Synchronous Area shall appoint in a Synchronous Area Agreement one TSO of this Synchronous Area **or the relevant body of ENTSO-E** as the Synchronous Area Monitor.	All TSOs of a Synchronous Area shall appoint in a Synchronous Area Agreement one TSO of this Synchronous as the Synchronous Area Monitor.	No role is defined for ENTSO-E as this would then be counter part of contracts, as an alternative, otherwise it should be the Synchronous Area Monitor for all TSOs
2	14	1	All TSOs of a LFC Block shall appoint in a multi-party agreement a TSO of this LFC Block as LFC Block Monitor for the LFC Block.	**While respecting the provisions of Article 3(3)**, all TSOs of a LFC Block shall appoint **(to be publicly available on website ENTSO-E)** in a multi-party agreement a TSO of this LFC Block as LFC Block Monitor for the LFC Block.	Multi-party agreement should be publicly available and under NRA approval and market parties consultation

2	15	1	If the values calculated for the measurement period of the Frequency Quality Target Parameters or the Frequency Restoration Control Error Target Parameters are respectively outside the set targets for the Synchronous Area or for the Control Block, all TSOs of the relevant Synchronous Area or of the relevant Control Block shall address to ACER and / or to NRAs a proposal which addresses the deficiency, this may include a modification to the rules including balancing markets and / or ancillary services markets and / or the rules for the behaviour of market participants in order to respect the established Frequency Quality Target Parameter values.	If the values calculated for the measurement period of the Frequency Quality Target Parameters or the Frequency Restoration Control Error Target Parameters are respectively outside the set targets for the Synchronous Area or for the Control Block, all TSOs of the relevant Synchronous Area or of the relevant Control Block shall address to ACER and / or to NRAs a proposal which addresses the deficiency, this may include a modification to the rules including balancing markets and / **or additional reserve products or contracts.**	Not acceptable reference to ancillary services markets which was not defined neither described in this code. It should be left for the network code on electricity balancing. Not acceptable reference to rules for the behaviour market participants. It should be left to competition law. Consultation as foreseen under article 3,3 is also needed.
2	15	2	If the value of the Frequency Quality Target Parameter is not met for the Synchronous Area or there is a justified expected risk that the Frequency Quality Target Parameter will not be met, each TSO of the affected Synchronous Area shall have the right to establish actions to improve System Frequency quality while respecting the provisions of Article 3(3). These actions shall include restrictions on the rate of change of active power output or input to Generating Units, Demand Facilities, HVDC Interconnectors connected to the TSO network.	Delete	TSOs must not impose arbitrary restrictions on market participants unless it is an Operational Security issue and then it should be in the Operational Security or Emergency network code.
2	15	3	If the value of any of the Frequency Restoration Control Error Target Parameters is not met for the LFC Block or there is a justified expected risk that any of the Frequency Restoration Control Error Target Parameters will not be met, each TSO of the affected LFC Block shall have the right to establish actions to improve Frequency Restoration Control Error quality while respecting the provisions of Article 3(3). These actions shall include restrictions on the rate of change of active power output or input to Generating Units, Demand Facilities and HVDC Interconnectors connected to the TSO.	Delete	TSOs must not impose arbitrary restrictions on market participants unless it is an Operational Security issue and then it should be in the Operational Security or Emergency network code.

Chapter 3 - Load-Frequency Control Structure					
3	17	1	The Process Activation Structure shall include: a) a FCP according to Article 19; and b) a FRP according to Article 20.	1. The Process Activation Structure shall include: a) a FCP according to Article 19; and b) a FRP according to Article 20. **c) a RRP according to Article 21; d) an Imbalance Netting Process according to Article 22; e) a Cross-Border FRR Activation Process according to Article 23; f) a Cross-Border RR Activation Process according to Article 24; and g) a Time Control Process**	The list of process activation structure shall include the elements in Article 17 §2. Reference to "may include" should be avoided. The network code should be constraining, except for cases when there is no RR or no imbalance netting. We think it is important to distinguish which processes are compulsory and which ones are not.
3	17	2	The Process Activation Structure may include: a) a RRP according to Article 21; b) an Imbalance Netting Process according to Article 22; c) a Cross-Border FRR Activation Process according to Article 23; d) a Cross-Border RR Activation Process according to Article 24; and e) a Time Control Process	delete	It should be included in Article 17 §1
3	18	1	When defining the Process Responsibility Structure, all TSOs of a Synchronous Area shall take into account at least the following criteria: a) size and the total inertia and synthetic inertia of the Synchronous Area; b) grid structure and/or network topology; and c) Load, Generation and HVDC Behaviour**.** In addition the TSOs of a Synchronous Area shall ensure that: d) the Synchronous Area consists of at least one Monitoring Area, one LFC Area and one LFC Block e) the community of all Monitoring Areas is congruent to the Synchronous Area f) the community of all LFC Areas is congruent to the Synchronous Area g) the community of all LFC Block is congruent to the Synchronous Area h) a Monitoring Area is part of one and only one LFC Area i) a LFC Area is part of one and only one LFC Block j) a LFC Block is part of one and only one Synchronous Area k) a LFC Area is congruent to one or more Monitoring Areas l) a LFC Block is congruent to one or more LFC Area Synchronous Area is congruent to one or more LFC Blocks	When defining the Process Responsibility Structure, all TSOs of a Synchronous Area shall take into account at least the following criteria: a) size and the total inertia and synthetic inertia of the Synchronous Area; b) grid structure and/or network topology; and c) Load, Generation and HVDC. In addition the TSOs of a Synchronous Area shall ensure that: d) the Synchronous Area consists of at least one Monitoring Area, one LFC Area and one LFC Block e) the community of all Monitoring Areas is congruent to the Synchronous Area f) the community of all LFC Areas is congruent to the Synchronous Area g) the community of all LFC Block is congruent to the Synchronous Area h) a Monitoring Area is part of one and only one LFC Area i) a LFC Area is part of one and only one LFC Block j) a LFC Block is part of one and only one Synchronous Area k) a LFC Area is congruent to one or more Monitoring Areas l) a LFC Block is congruent to one or more LFC Area Synchronous Area is congruent to one or more LFC Blocks	Term "behaviour" not defined in the definitions of the network code. We think, historically known and anticipated load, generation and hvdc profiles should be taken into account

3	18	4	All TSOs of a LFC Block shall: a) **endeavour** to fulfil the Frequency Restoration Control Error Target Parameters of the LFC Block as defined in Article 10; and b) comply with FRR Dimensioning Rules established in Article 30 and RR Dimensioning Rules established in Article 33.	All TSOs of a LFC Block shall: a) fulfil the Frequency Restoration Control Error Target Parameters of the LFC Block as defined in Article 10; and b) comply with FRR Dimensioning Rules established in Article 30 and RR Dimensioning Rules established in Article 33.	Delete "endeavour". Network code should be constraining.
3	18	7	All TSOs of a Monitoring Area shall agree in a TSO multi-party agreement on the specific allocation of responsibilities between TSOs within the Monitoring Area for the implementation of the obligations established in Article 18(3). All TSOs of a LFC Area, LFC Block and Synchronous Area shall agree on similar multi-party agreement for the implementation of the obligations established in Article 18 (4) to Article 18(5).	While respecting the provisions of Article 3(3), all TSOs of a Monitoring Area shall agree **(to be published on ENTSO-E website)** in a TSO multi-party agreement on the specific allocation of responsibilities between TSOs within the Monitoring Area for the implementation of the obligations established in Article 18(3). All TSOs of a LFC Area, LFC Block and Synchronous Area shall agree on similar multi-party agreement for the implementation of the obligations established in Article 18 (4) to Article 18(5).	Multi-party agreement should be publicly available and under NRA approval and market parties consultation.
3	19	1	The FCP shall be designed to stabilize the System Frequency by activation of FCR	The FCP shall be designed to stabilize the System Frequency, ***after a frequency drop, within a pre-defined range*** by activation of FCR in the SA.	Consistency with definition of FCR
3	20	4	For automated FRR activation, the set-point value shall be defined by a single frequency restoration controller operated by a TSO within its LFC Area. The frequency restoration controller shall: a) be an automatic control device designed to reduce the Frequency Restoration Control Error to zero; b) be operated in a closed-loop manner with Frequency Restoration Control Error as input and set-point value for FRR activation as output; c) have proportional-integral behaviour; d) have an Anti-Windup Logic; and e) be operated with a Cycle Time no longer than i. 5 seconds for the Synchronous Area CE; ii. 10 seconds for the Synchronous Area NE; and iii. a time interval to be agreed for Baltic, CY, GB, and IRE.	While respecting the provisions of Article 3(3), for automated FRR activation, the set-point value **of the Frequency Restoration Reserve** shall be defined by a single frequency restoration controller operated by a TSO within its LFC Area. The frequency restoration controller shall: a) be an automatic control device designed to reduce the Frequency Restoration Control Error to zero; b) be operated in a closed-loop manner with Frequency Restoration Control Error as input and set-point value for FRR activation as output; c) have proportional-integral behaviour; d) have an Anti-Windup Logic; and e) be operated with a Cycle Time no longer than i. 5 seconds for the Synchronous Area CE; ii. 10 seconds for the Synchronous Area NE; and iii. a time interval to be agreed for Baltic, CY, GB, and IRE.	Need to precise what set point value is meant here.

3	20	6	Without prejudice to Article 18(3) and Article 20, when a LFC Block consists of more than one LFC Areas all TSOs of the LFC Block shall have the right to appoint in a TSO multi-party agreement referred to in Article 18(6) one TSO of the LFC Block to: a) calculate and monitor the Frequency Restoration Control Error of the whole LFC Block; and b) take the Frequency Restoration Control Error of the whole LFC Block into account for the calculation of the set-point value for FRR activation according to Article 20(4) and Article 20(5) in addition to the Frequency Restoration Control Error of his LFC Area.	While respecting the provisions of Article 3(3) and without prejudice to Article 18(3) and Article 20, when a LFC Block consists of more than one LFC Areas all TSOs of the LFC Block shall have the right to appoint **(to be published on the ENTSOE website)** in a TSO multi-party agreement referred to in Article 18(6) one TSO of the LFC Block to: a) calculate and monitor the Frequency Restoration Control Error of the whole LFC Block; and b) take the Frequency Restoration Control Error of the whole LFC Block into account for the calculation of the set-point value for FRR activation according to Article 20(4) and Article 20(5) in addition to the Frequency Restoration Control Error of his LFC Area.	Information should be made public
3	20	7	Where a LFC Area consists of more than one Monitoring Areas, all TSOs of the LFC Area shall appoint one TSO who shall be responsible for the implementation and operation of the Frequency Restoration Process according to Article 20 as part of the TSO multi-party agreement referred to in Article 18(6).	**While respecting the provisions of Article 3(3)** and where a LFC Area consists of more than one Monitoring Areas, all TSOs of the LFC Area shall appoint one TSO who shall be responsible for the implementation and operation of the Frequency Restoration Process according to Article 20 as part of the TSO multi-party agreement referred to in Article 18(6).	TSO multi-party agreement should be publicly available and under NRA approval and market parties consultation.
3	21	2	The set-point value shall be defined by a TSO for its LFC Area where the RRP is implemented.	The set-point value **of the RR activation** shall be defined by a TSO for its LFC Area where the RRP is implemented.	Need to precise what set point value is meant here.
3	22	1	The Imbalance Netting Process shall be designed to reduce the amount of simultaneous counteracting FRR activation of different participating and adjacent LFC Areas by Imbalance Netting Power Interchange. **In accordance with 0** each TSO shall have the right to implement the Imbalance Netting Process for LFC Areas within the same LFC Block, between different LFC Blocks or between different Synchronous Areas.	The Imbalance Netting Process shall be designed to reduce the amount of simultaneous counteracting FRR activation of different participating and adjacent LFC Areas by Imbalance Netting Power Interchange. Each TSO shall have the right to implement the Imbalance Netting Process for LFC Areas within the same LFC Block, between different LFC Blocks or between different Synchronous Areas.	Typo Error

3	22	3	a) defining an active power flow over a Virtual Tie-Line which shall be part of the Frequency Restoration Control Error calculation; or	a) defining an active power flow over a **Physical** Tie-Line which shall be part of the Frequency Restoration Control Error calculation; or	No reference to Virtual Tie-Line but to Physical Tie-Line
3	22	6	The Imbalance Netting Process Interchange between LFC Areas shall not exceed the Available Transmission Capacity.	The Imbalance Netting Process Interchange between LFC Areas shall not exceed the Available Transmission Capacity ***according to the methodology defined in network code on Electricity Balancing.***	reference should be made to NC EB where calculation of ATC is made. Otherway, how is ATC evaluated?
3	22	9	All TSOs participating in the same Imbalance Netting Process shall appoint in a TSO multi-party agreement roles and responsibilities of the TSOs including a) the responsibility of all participating TSOs to provide input data for Imbalance Netting Power Interchange calculation including the Available Transmission Capacity; and b) the appointment of one of the TSOs who shall be responsible for the calculation of the Imbalance Netting Power Interchange including the limitation of the interchange with respect to the Available Transmission Capacity.	While respecting the provisions of Article 3(3), all TSOs participating in the same Imbalance Netting Process shall appoint **(to be published on ENTSO-E website)** in a TSO multi-party agreement roles and responsibilities of the TSOs including a) the responsibility of all participating TSOs to provide input data for Imbalance Netting Power Interchange calculation including the Available Transmission Capacity; and b) the appointment of one of the TSOs who shall be responsible for the calculation of the Imbalance Netting Power Interchange including the limitation of the interchange with respect to the Available Transmission Capacity.	TSO multi-party agreement should be publicly available and under NRA approval and market parties consultation.
3	23	1	The Cross-Border FRR Activation Process shall be designed to enable a TSO to perform the FRP by Frequency Restoration Power Interchange between LFC Areas. In accordance with 0 a TSO shall have the right to implement the Cross-Border FRR Activation Process for LFC Areas within the same LFC Block, between different LFC Blocks or between different Synchronous Areas.	**While respecting the provisions of Article 3(3)**, the Cross-Border FRR Activation Process shall be designed to enable a TSO to perform the FRP by Frequency Restoration Power Interchange between LFC Areas. A TSO shall have the right to implement the Cross-Border FRR Activation Process for LFC Areas within the same LFC Block, between different LFC Blocks or between different Synchronous Areas.	Typo error and design of the cross-border FRR activation process should be publicly available and under NRA approval and market parties consultation.
3	23	5	The Frequency Restoration Power Interchange between LFC Areas shall not exceed the Available Transmission Capacity.	The Frequency Restoration Power Interchange between LFC Areas shall not exceed the Available Transmission Capacity ***according to the methodology defined in network code on Electricity Balancing***.	reference should be made to NC EB where calculation of ATC is made. Otherway, how is ATC evaluated?

3	24	1	The Cross-Border RR Activation Process shall be designed to enable a TSO to perform the RRP through Replacement Power Interchange between LFC Areas. In accordance with 0 a TSO shall have the right to implement the Cross-Border RR Activation Process for LFC Areas within the same LFC Block, between different LFC Blocks or between different Synchronous Areas.	**While respecting the provisions of Article 3(3),** the Cross-Border RR Activation Process shall be designed to enable a TSO to perform the RRP through Replacement Power Interchange between LFC Areas. A TSO shall have the right to implement the Cross-Border RR Activation Process for LFC Areas within the same LFC Block, between different LFC Blocks or between different Synchronous Areas.	Typo Error, and design of the cross-border FRR activation process should be publicly available and under NRA approval and market parties consultation.
3	26	3	Each TSO of a LFC Area shall: a) ensure a sufficient quality and availability of the Frequency Restoration Control Error calculation; b) perform real-time quality monitoring of the Frequency Restoration Control Error calculation; c) take action in case of Frequency Restoration Control Error miscalculation; d) perform an ex-post quality monitoring of the Frequency Restoration Control Error calculation by comparing Frequency Restoration Control Error to reference values at least on an annual basis; and	Each TSO of a LFC Area shall: a) ensure a sufficient quality and availability of the Frequency Restoration Control Error calculation; b) perform real-time quality monitoring of the Frequency Restoration Control Error calculation; c) take action in case of Frequency Restoration Control Error miscalculation; d) perform **and publish** an ex-post quality monitoring of the Frequency Restoration Control Error calculation by comparing Frequency Restoration Control Error to reference values at least on an annual basis; and	Public transparency on monitoring report should be made
Chapter 4 - Frequency Containement Reserves (FCR)					
4	27	4			
4	27	5			

	27	6	For CE: the Reference Incident shall be the largest imbalance that may result from an instantaneous change of active power of two generating units, two demand facilities or two HVDC interconnectors connected to the same electrical node.	For CE: the Reference Incident shall be the largest imbalance that may result from an instantaneous change of active power of i) two generating units, two demand facilities or two HVDC interconnectors connected to the same electrical node or **ii) any combination of multiple generating units, demand facilities and HVDC interconnectors triggered by the same event.**	The day-ahead forecast error of the TSO is increasing with the expansion of production capacity with stochastic generation. Depending upon the development of the share of RES in the European power generation portfolio, such forecasting errors might have an increasingly dominant effect upon the demand for FCR. Therefore, the dimensioning of FCR-reserves should cover production changes of larger conventional units as much as production changes of multiple decentralized production units occurring simultaneously as a result of the same cause.
4	28	2	All TSOs of a Synchronous Area shall have the right to determine additional properties of the FCR required to ensure operational security in the Synchronous Area by means of a set of technical parameters while respecting the provisions of Article 3(3). These properties of FCR shall reflect the installed capacity, structure and pattern of consumption and generation of the Synchronous Area.	Delete	The possibility of setting up additional requirements by TSOs will lead to heterogeneous requirements for Reserve providing Units within and across different synchronous areas. The development of a cross border market for reserves would however imply a harmonised set of requirements for all reserve providing units. Therefore, all technical requirements should explicitly be defined in the LFCR without an option of setting up more stringent requirements.
4	28	3	All TSOs of a Synchronous Area shall review the additional properties of FCR at least on an annual basis.	Delete	The possibility of setting up additional requirements by TSOs will lead to heterogeneous requirements for Reserve providing Units within and across different synchronous areas. The development of a cross border market for reserves would however imply a harmonised set of requirements for all reserve providing units. Therefore, all technical requirements should explicitly be defined in the LFCR without an option of setting up more stringent requirements.

4	28	4	The Reserve Connecting TSO shall have the right to define additional requirements for FCR Providing Groups and shall have the right to exclude FCR Providing Groups from the provision of FCR based on technical arguments to ensure operational security. The FCR Provider shall ensure that monitoring of the FCR activation of the generating and/or demand facilities within a Reserve Providing Group is possible. Each TSO shall implement a FCR Prequalification Process to assess the fulfilment of the technical and availability requirements by possible FCR Proving Units and FCR Providers. A possible FCR Provider shall have the right to apply for a prequalification of possible FCR Providing Units and as FCR Provider at a relevant Reserve Connecting TSO. The Reserve Connecting TSO shall process this application without undue delay and shall prequalify FCR Providing Units or FCR Providing Groups who successfully passed a FCR Prequalification Process.	The Reserve Connecting TSO shall have the right to define additional requirements for FCR Providing Groups and shall have the right to exclude FCR Providing Groups from the provision of FCR based on technical arguments to ensure operational security. The FCR Provider shall ensure that monitoring of the FCR activation of the generating and/or demand facilities within a Reserve Providing Group is possible. Each TSO shall implement a FCR Prequalification Process to assess the fulfilment of the technical and availability requirements by possible FCR Proving Units and FCR Providers. A possible FCR Provider shall have the right to apply for a prequalification of possible FCR Providing Units and as FCR Provider at a relevant Reserve Connecting TSO. The Reserve Connecting TSO shall process this application within 3 months subject the FCR providing unit has met all administrative requirements and shall prequalify FCR Providing Units or FCR Providing Groups who successfully passed a FCR Prequalification Process.	More precise timing; impossible to measure "without undue delay"
4	28	5	Each Reserve Connecting TSO, each FCR Providing Unit and each FCR Providing Group shall comply with the required properties for FCR according to Article 28(1) and Article 28(2).	Each Reserve Connecting TSO, each FCR Providing Unit and each FCR Providing Group shall comply with the required properties for FCR according to Article 28(1) **and Article 28(2).**	see justification of Art. 28 Para. 2
4	28	7	A FCR Providing Unit or FCR Providing Group shall activate the agreed FCR by means of a proportional governor reacting to frequency deviations or alternatively based on a piecewise linear power-frequency characteristic in the case of relay activated FCR corresponding to Article 28(1) and Article 28(2).	A FCR Providing Unit or FCR Providing Group shall activate the agreed FCR by means of a proportional governor reacting to frequency deviations or alternatively based on a piecewise linear power-frequency characteristic in the case of relay activated FCR corresponding to Article 28(1) **and Article 28(2).**	see justification of Art. 28 Para. 2

4	28	8	Each Reserve Connecting TSO shall ensure that the activation of its FCR Providing Units is in line with the requirements of the Synchronous Area according to Article 28(1) and Article 28(2).	Each Reserve Connecting TSO shall ensure that the activation of its FCR Providing Units is in line with the requirements of the Synchronous Area according to Article 28(1) **and Article 28(2).**	see justification of Art. 28 Para. 2
4	28	9	Each Reserve Connecting TSO shall monitor all FCR Providing Units in its Area. Each FCR Provider shall make available to the Reserve Connecting TSO for each of its FCR Providing Units at least the following information: a) status signal indicating if FCR is on or off; b) time-stamped scheduled active power output; c) time-stamped instantaneous active power; d) time-stamped instantaneous active power **without FCR activation; and** e) droop of the governor; On request from the Reserve Connecting TSO, a FCR Provider has to make this information available in real time with a time resolution of at least 10 seconds.	Each Reserve Connecting TSO shall monitor all FCR Providing Units in its Area. Each FCR Provider shall make available to the Reserve Connecting TSO for each of its FCR Providing Units at least the following information: a) status signal indicating if FCR is on or off; b) time-stamped scheduled active power output; c) time-stamped instantaneous active power; and d) droop of the governor; On request from the Reserve Connecting TSO, a FCR Provider has to make this information available in real time with a time resolution of at least 10 seconds.	It does not really make sense is impossible to provide information on active power without FCR activation, anyway such an information does not make sense as it would be a theoretically calculated value
4	29	2	2. The TSOs of a Synchronous Area shall determine at least on an annual basis the size of the K-Factor of the Synchronous Area taking into account factors including, but not limited to: a) The FCR Capacity divided by the Maximum Steady-State Frequency Deviation; b) the auto-control of generation; and c) the self-regulation of load.		Give a better definition on the K-Factor. It is unclear.
4	29	4	Each TSO shall require from its FCR Provider the continuous availability of FCR with the exception of an unplanned outage of a Reserve Providing Unit. A FCR Provider shall comply with this availability requirement. A FCR Provider shall inform its Reserve Connecting TSO immediately about an unavailability of a FCR Providing Unit or all or a part of a FCR Providing Group.	Each TSO shall require from its FCR Provider the continuous availability of FCR with the exception of an unplanned outage of a **FCR** Providing Unit. A FCR Provider shall comply with this availability requirement. A FCR Provider shall inform its Reserve Connecting TSO **without undue delay** about an unavailability of a FCR Providing Unit or all or a part of a FCR Providing Group.	Consistency with the definition of FCR Providing Unit [The requirements to communicate unavailability are not well described]. Definition of unplanned outages should be in line with NC OPS (Forced outages?)

4	29	4	Each TSO shall require from its FCR Provider the continuous availability of FCR with the exception of an unplanned outage of a Reserve Providing Unit.	Each TSO shall require from its FCR Provider the continuous availability of FCR **according to the contractual agreement between Provider and TSO** with the exception of an unplanned outage of a Reserve Providing Unit.	In an agreement between parties exception can be defined. Think of "out of operation situation" due to commercially arguments (negative margins).
4	29	5	Each TSO shall ensure, **or shall agree with its FCR Providers that they ensure that:** The loss of a FCR Providing Unit does not endanger the System Security by:	Each TSO shall ensure that: The loss of a FCR Providing Unit does not endanger the System Security by:	System security and replacement of FCR power is not the FCR Provider responsibility, but the TSO responsibility.
4	29	6	A FCR Providing Unit or FCR Providing Group:a) with unlimited FCR providing capability shall activate its FCR as long as the Frequency Deviation persists.b) with limited FCR providing capability shall activate its FCR as long as the Frequency Deviation persists unless its energy reservoir is exhausted in either directionSuch a FCR Providing Unit or FCR Providing Group shall be able to fully activate its FCR continuously for a time period of not less than 30 minutes and for an equivalent longer time period in case of smaller Frequency Deviations and shall specify the limitations of the energy reservoir in the Prequalification process.	A FCR Providing Unit or FCR Providing Group:a) with unlimited FCR providing capability shall activate its FCR as long as the Frequency Deviation persists.b) with limited FCR providing capability shall activate its FCR as long as the Frequency Deviation persists unless its energy reservoir is exhausted.FCR Providing Unit or FCR Providing Group with limited FCR capability shall be able to fully activate its FCR continuously for a time period of not less than **15** minutes and for an equivalent longer time period in case of smaller Frequency Deviations and shall specify the limitations of the energy reservoir in the Prequalification process.	The FRR shall be designed to progressively replace the activated FCR. Therefore, FCR Providing Groups or Units shall be able to fully activate their reserve until the activation of FRR, i.e. for a period of not less than 15 min. Extending this requirement to a 30' threshold is not consistent and would imply extra-costs for FCR Providers without any justification. Wording improvements: Term in either direction not needed. More clarification on Word such.
Chapter 5 - Frequency Restoration Reserves (FRR)					
5	30	1	All TSOs of a LFC Block shall define FRR Dimensioning Rules in a TSO multiparty agreement while respecting the provisions of Article 3(3).	**While respecting the provisions of Article 3(3)**, all TSOs of a LFC Block shall define FRR Dimensioning Rules in a TSO multi-party agreement **publicly available on ENTSO-E website.**	TSO multi-party agreement should be publicly available.

5	30	2	The FRR Dimensioning Rules shall comprise at least the following requirements: a) All TSOs of a LFC Block shall determine the required FRR Capacity of the LFC Block based on consecutive historical records at least comprising historical LFC Block Imbalance values. The sampling of these historical records shall be at least the Time To Restore Frequency. The considered time period of these records shall be representative and include at least one full year period ending not earlier than 6 months prior to the calculation; b) All TSOs of a LFC Block shall determine the FRR Capacity of the LFC Block such that it is sufficient to respect the current Frequency Restoration Control Error Target Parameters in accordance with Article 10 for the considered historical period of time based at least on a probabilistic methodology. All TSOs of a LFC Block shall take expected significant changes to the distribution of LFC Block Imbalances or other relevant influencing factors relative to the considered time period into account for this determination; c) All TSOs of a LFC Block shall determine the ratio of Automatic FRR Capacity and Manual FRR Capacity and the Automatic FRR Full Activation Time and Manual FRR Full Activation Time such that requirement (b) can be fulfilled. d) All TSOs of a LFC Block shall determine the positive FRR Capacity such that it is not smaller than the positive Dimensioning Incident of the LFC Block; e) All TSOs of a LFC Block shall determine the negative FRR Capacity such that it is not smaller than the negative Dimensioning Incident of the LFC Block; f) All TSOs of a LFC Block shall determine the FRR Capacity of a LFC Block and possible geographical limitations for its distribution with respect to the Available Transmission Capacity within the LFC Block and to other LFC Blocks; g) All TSOs of a LFC Block shall ensure that the positive FRR Capacity is sufficient to cover the positive LFC Block Imbalances in at least 99% of the time based on the historical record as defined in (a) ; h) All TSOs of a LFC Block shall ensure that the negative FRR Capacity is sufficient to cover the negative LFC Block Imbalances in at least 99% of the time based on the historical record as defined in (a); i) All TSOs of a LFC Block, while respecting the provision Error! Reference source not found., can enter into a sharing agreement for FRR Capacity with other LFC Blocks according to the provision of Chapter 7.	The FRR Dimensioning Rules shall comprise at least the following requirements: a) All TSOs of a LFC Block shall determine the required FRR Capacity of the LFC Block based on i) consecutive historical records at least comprising historical LFC Block Imbalance values and ***ii) the largest expected imbalance from the forecast error at the gate closure time of the intraday trading.*** The sampling of these historical records shall be at least the Time To Restore Frequency. The considered time period of these records shall be representative and include at least one full year period ending not earlier than 6 months prior to the calculation; b) All TSOs of a LFC Block shall determine the FRR Capacity of the LFC Block such that it is sufficient to respect the current Frequency Restoration Control Error Target Parameters in accordance with Article 10 for the considered historical period of time based at least on a probabilistic methodology. All TSOs of a LFC Block shall take expected significant changes to the distribution of LFC Block Imbalances or other relevant influencing factors relative to the considered time period into account for this determination; c) All TSOs of a LFC Block shall determine the ratio of Automatic FRR Capacity and Manual FRR Capacity and the Automatic FRR Full Activation Time and Manual FRR Full Activation Time such that requirement (b) can be fulfilled. d) All TSOs of a LFC Block shall determine the positive FRR Capacity such that it is not smaller than the positive Dimensioning Incident of the LFC Block; e) All TSOs of a LFC Block shall determine the negative FRR Capacity such that it is not smaller than the negative Dimensioning Incident of the LFC Block; f) All TSOs of a LFC Block shall determine the FRR Capacity of a LFC Block and possible geographical limitations for its distribution with respect to the Available Transmission Capacity within the LFC Block and to other LFC Blocks; g) All TSOs of a LFC Block shall ensure that the positive FRR Capacity is sufficient to cover the positive LFC Block Imbalances in at least 99% of the time based on the historical record as defined in (a) ; h) All TSOs of a LFC Block shall ensure that the negative FRR Capacity is sufficient to cover the negative LFC Block Imbalances in at least 99% of the time based on the historical record as defined in (a); i) All TSOs of a LFC Block can enter into a sharing agreement for FRR Capacity with other LFC Blocks according to the provision of Chapter 7. The sampling of these historical records shall be at least the Time To Restore Frequency. The considered time period of these records shall be representative and include at least a period of five full years ending not earlier than 6 months prior to the calculation;	typo error in sub bullet (i); the comments on point (j) and (k) about the dimensioning 99% and 30% have not been taken up in this list, for me that is ok. Dimensioning which is based only on the past is most likely not appropriate for the expected quickly changing European production, with more stochastic generators and less reliable forecast. ords without giving figures to affected parties. Indeed, this could lead to a significant increase in the total amount of FRR (which is no more limited), and, should be transparently exposed to the stakeholders. Demand for regulation reserve should not be reduced based on improper sizing methods reducing the security of the network. 99 % means that in 87.6 hours in an annual time interval is not covered with sufficient FRR. Major grid incidents where a bigger amount of FRR is necessary will be filtered out by the 99% rule. The dimensioning basis should include abnormal incidents to secure stability an system security. Historical data should be made transparent

	30	2	The FRR Dimensioning Rules shall comprise at least the following requirements:a) All TSOs of a LFC Block shall determine the required FRR Capacity of the LFC Block based on consecutive historical records at least comprising historical LFC Block Imbalance values. The sampling of these historical records shall be at least the Time To Restore Frequency. The considered time period of these records shall be representative and include at least one full year period ending not earlier than 6 months prior to the calculation;b) All TSOs of a LFC Block shall determine the FRR Capacity of the LFC Block such that it is sufficient to respect the current Frequency Restoration Control Error Target Parameters in accordance with Article 10 for the considered historical period of time based at least on a probabilistic methodology. All TSOs of a LFC Block shall take expected significant changes to the distribution of LFC Block Imbalances or other relevant influencing factors relative to the considered time period into account for this determination;c) All TSOs of a LFC Block shall determine the ratio of Automatic FRR Capacity and Manual FRR Capacity and the Automatic FRR Full Activation Time and Manual FRR Full Activation Time such that requirement (b) can be fulfilled.d) All TSOs of a LFC Block shall determine the positive FRR Capacity such that it is not smaller than the positive Dimensioning Incident of the LFC Block;e) All TSOs of a LFC Block shall determine the negative FRR Capacity such that it is not smaller than the negative Dimensioning Incident of the LFC Block;f) All TSOs of a LFC Block shall determine the FRR Capacity of a LFC Block and possible geographical limitations for its distribution with respect to the Available Transmission Capacity within the LFC Block and to other LFC Blocks;g) All TSOs of a LFC Block shall ensure that the positive FRR Capacity is sufficient to cover the positive LFC Block Imbalances in at least 99% of the time based on the historical record as defined in (a) ;h) All TSOs of a LFC Block shall ensure that the negative FRR Capacity is sufficient to cover the negative LFC Block Imbalances in at least 99% of the time based on the historical record as defined in (a);i) All TSOs of a LFC Block, while respecting the provision Error! Reference source not found., can enter into a sharing agreement for FRR Capacity with other LFC Blocks according to the provision of Chapter 7.	The FRR Dimensioning Rules shall comprise at least the following requirements:a) All TSOs of a LFC Block shall determine the required FRR Capacity of the LFC Block based on i) consecutive historical records at least comprising historical LFC Block Imbalance values and ***ii) the largest expected imbalance from the forecast error at the gate closure time of the intraday trading.*** The sampling of these historical records shall be at least the Time To Restore Frequency. The considered time period of these records shall be representative and include at least one full year period ending not earlier than 6 months prior to the calculation;b) All TSOs of a LFC Block shall determine the FRR Capacity of the LFC Block such that it is sufficient to respect the current Frequency Restoration Control Error Target Parameters in accordance with Article 10 for the considered historical period of time based at least on a probabilistic methodology. All TSOs of a LFC Block shall take expected significant changes to the distribution of LFC Block Imbalances or other relevant influencing factors relative to the considered time period into account for this determination;c) All TSOs of a LFC Block shall determine the ratio of Automatic FRR Capacity and Manual FRR Capacity and the Automatic FRR Full Activation Time and Manual FRR Full Activation Time such that requirement (b) can be fulfilled.d) All TSOs of a LFC Block shall determine the positive FRR Capacity such that it is not smaller than the positive Dimensioning Incident of the LFC Block;e) All TSOs of a LFC Block shall determine the negative FRR Capacity such that it is not smaller than the negative Dimensioning Incident of the LFC Block;f) All TSOs of a LFC Block shall determine the FRR Capacity of a LFC Block and possible geographical limitations for its distribution with respect to the Available Transmission Capacity within the LFC Block and to other LFC Blocks;g) All TSOs of a LFC Block shall ensure that the positive FRR Capacity is sufficient to cover the positive LFC Block Imbalances in at least 99% of the time based on the historical record as defined in (a) ;h) All TSOs of a LFC Block shall ensure that the negative FRR Capacity is sufficient to cover the negative LFC Block Imbalances in at least 99% of the time based on the historical record as defined in (a);i) All TSOs of a LFC Block can enter into a sharing agreement for FRR Capacity with other LFC Blocks according to the provision of Chapter 7. The sampling of these historical records shall be at least the Time To Restore Frequency. The considered time period of these records shall be representative and include at least a period of five full years ending not earlier than 6 months prior to the calculation;	typo error in sub bullet (i); the comments on point (j) and (k) about the dimensioning 99% and 30% have not been taken up in this list, for me that is ok. Dimensioning which is based only on the past is most likely not appropriate for the expected quickly changing European production, with more stochastic generators and less reliable forecast. ords without giving figures to affected parties. Indeed, this could lead to a significant increase in the total amount of FRR (which is no more limited), and, should be transparently exposed to the stakeholders. Demand for regulation reserve should not be reduced based on improper sizing methods reducing the security of the network. 99 % means that in 87.6 hours in an annual time interval is not covered with sufficient FRR. Major grid incidents where a bigger amount of FRR is necessary will be filtered out by the 99% rule. The dimensioning basis should include abnormal incidents to secure stability an system security. Historical data should be made transparent

5	30	2	Shall never exceed 30% of the size of the Positive Dimensioning incident.	N.A.	On which assumptions or simulation calculations are the 30% based? The exchange of reserve capacities should not be limited too much as this would unnecessarily decrease the liquidity of the market and increase the cost of ancillary services.
5	30	2	The FRR Dimensioning Rules shall comprise at least the following requirements: ... c) All TSOs of a LFC Block shall determine the ratio of Automatic FRR Capacity and Manual FRR Capacity and the Automatic FRR Full Activation Time and Manual FRR Full Activation Time such that requirement (b) can be fulfilled. ...	The FRR Dimensioning Rules shall comprise at least the following requirements: ... c) All TSOs of a LFC Block shall determine the ratio of Automatic FRR Capacity and Manual FRR Capacity and the Automatic FRR Full Activation Time and Manual FRR Full Activation Time such that requirement (b) can be fulfilled, ***and provide ACER and NRA's with technical justifications*****.** ...	These data should be publicly available and under NRA approval.
5	30	3	All TSOs of a LFC Block shall agree in a TSO multi-party agreement on the specific allocation of responsibilities between TSOs of different LFC Areas for the implementation of the obligations established in Article 30.	**While respecting the provisions of Article 3(3)**, all TSOs of a LFC Block shall agree in **a on ENTSO-E website published** TSO multi-party agreement on the specific allocation of responsibilities between TSOs of different LFC Areas for the implementation of the obligations established in Article 30.	TSO multi-party agreement should be publicly available and under NRA approval and market parties consultation.
5	31	1	c) A FRR provider shall be able to supply real-time measurements to the Reserve Receiving TSO for each FRR Providing Unit and for each generating unit or demand facility larger than 1 MW being part of a FRR Providing Group. These real time measurements shall include the activated FRR and the relevant reference power production or consumption	c) A FRR provider shall be able to supply real-time measurements **at the Connection Point** to the Reserve Receiving TSO for each FRR Providing Unit and for each generating unit or demand facility larger than 1 MW being part of a FRR Providing Group. These real time measurements shall include the activated FRR and the **?** relevant reference ? power production or consumption	Need to precise where the measurements has to be made, and also to precise what does mean the "relevant reference" power production/consumption.

5	31	1	c) A FRR provider shall be able to supply real-time measurements to the Reserve Receiving TSO for each FRR Providing Unit and for each generating unit or demand facility larger than 1 MW being part of a FRR Providing Group. These real time measurements shall include the activated FRR and the relevant reference power production or consumption	c) A FRR provider shall be able to supply real-time measurements **at the Connection Point** to the Reserve Receiving TSO for each FRR Providing Unit and for each generating unit or demand facility larger than 1 MW being part of a FRR Providing Group. These real time measurements shall include the activated FRR and the **?** relevant reference **?** power production or consumption	**Need to precise where the measurements has to be made, and also to precise what does mean the "relevant reference" power production/consumption.**
5	31	1	c) A FRR Provider shall be able to supply real-time measurements to the Reserve Receiving TSO for each FRR Providing Unit and for each generating unit or demand facility larger than 1 MW being part of a FRR Providing Group. These real time measurements shall include the activated FRR and the relevant reference power production or consumption.	c) A FRR Provider shall be able to monitor on a real-time **basis per** Reserve Receiving TSO for each FRR Providing Unit or FRR Providing Group for each generating unit or demand facility larger than 1 MW being part of a FRR Providing Group to ensure the quality of the response**. It is recommended t**hat these real time measurements shall include the activated FRR and the relevant reference power production or consumption.	If the FRR power is provided by more than one Generating or Demand facility, than the information can be based on the group measurements. The connecting TSOs can measure all values within its substation. As well within the qualification process and RfG compliance tests the FRR Provider has demonstrated the ability of each plant to fulfil the requirements. If the TSOs want to control that additionally it is up to their additional installations. The Provider needs to be able to prove the delivery of the contractual agreed product.
5	31	2	a) a FRR Providing Unit or FRR Providing Group for Automatic FRR shall be able to activate its complete FRR Capacity within the Automatic FRR Full Activation Time of the LFC Block; and	a) a FRR Providing Unit or FRR Providing Group for Automatic FRR shall be able to activate its complete **FRR Capacity** within the **Automatic FRR Full Activation Time** of the LFC Block; and	FRR Capacity to be defined and, Automatic FRR Full Activation Time also to be defined in concrete figures in the code.
5	31	2	The reserve Connecting TSO shall have the right to define additional requirements for FRR Providing Groups and shall have the right to exclude FRR Providing Groups from the provision of FRR based on technical arguments to ensure operational security.	The reserve Connecting TSO shall have the right to define additional requirements for FRR Providing Groups and shall have the right to exclude FRR Providing Groups from the provision of FRR based on technical arguments to ensure operational security, **while respecting the provisions of Article 3(3).**	Who will guard the interest of FRR Providing Groups. As it is defined now TSOs have full space to define extra requirements and exclude parties from FRR Provision, without any approval of the NRA.

5	31	3	A FRR Provider shall inform its Reserve Connecting TSO immediately about a reduction of the availability of its FRR Providing Unit or its FRR Providing Group.	A FRR Provider shall inform its Reserve Connecting TSO immediately about a reduction of the availability of its FRR Providing Unit or its FRR Providing Group **if the FRR can´t be substituted by another FRR Providing Unit or within the FRR Providing Group.**	It is only relevant for the TSO when the contractual agreed product can´t be delivered. The Provider needs to be able to prove the delivery of the contractual agreed product.
5	32	2	The TSOs of a Synchronous Area shall determine the Synchronous Area risk level either to be: a) High Synchronous Area State; or b) Elevated Synchronous Area State; or c) Normal Synchronous Area State.	The TSOs of a Synchronous Area shall determine the Synchronous Area risk level **as defined in the Network Code on Operational Security**	Reference should be made to Area States as already defined in the Network Code on Operational Security
5	32	3	The TSOs of a LFC Block shall determine the LFC Block Threshold level either to be:	The TSOs of a LFC Block shall determine the LFC Block **threshold** level either to be:	There is no definition for "Threshold" in Article 2. Please either give a definition in Article 2 or change it into small letters for the reason of conformity. The same for no. a) to c).
5	32	3	The TSOs of a LFC Block shall determine the LFC Block Threshold level either to be: a) Level 2 LFC Block Threshold; or b) Level 1 LFC Block Threshold; or c) Normal LFC Block Threshold.	The TSOs of a LFC Block shall determine **the commonly defined, justified and published** LFC Block Thresholds level either to be: a) Level 2 LFC Block Threshold; or b) Level 1 LFC Block Threshold; or c) Normal LFC Block Threshold.	A common definition and criteria is where the LFC Block Thresholds base on need to be defined. Everywhere the same measurement. The criteria for the different thresholds needs to be published as well as the monitoring results in a yearly report.

5	32	4	All TSOs of a Synchronous Area shall define common rules for the operation of the FRPs in a Synchronous Area Agreement while respecting the provisions of Article 3(3). These common rules shall comprise at least: a) The Synchronous Area Monitor shall inform the TSOs of the Synchronous Area about the current Synchronous Area risk level b) in case of Elevated Synchronous Area State, the TSOs of a Synchronous Area shall perform predefined coordinated actions of LFC Blocks to actively reduce the Frequency Deviation. For these actions the TSOs of a Synchronous Area may deviate from the obligation set in Article 20(1)(a); and c) in case of High Synchronous Area State, the TSOs of a Synchronous Area shall perform predefined coordinated and individual actions of LFC Blocks to actively reduce the Frequency Deviation. For these actions the TSOs of a Synchronous Area may deviate from the obligation set in Article 20(1) (a). d) The TSOs of a LFC Block shall reduce the absolute value of Frequency Restoration Control Error of the LFC Block by activation of FRR and RR. e) The TSOs of a LFC Block shall make best endeavours to avoid times with persisting Frequency Restoration Control Errors.	All TSOs of a Synchronous Area shall define common rules for the operation of the FRPs in a Synchronous Area Agreement while respecting the provisions of Article 3(3). These common rules shall comprise at least: a) The Synchronous Area Monitor shall inform the TSOs of the Synchronous Area about the current Synchronous Area risk level b) in case of Elevated Synchronous Area State, the TSOs of a Synchronous Area shall perform predefined coordinated actions of LFC Blocks, in accordance with the network code on Emergency, to actively reduce the Frequency Deviation. For these actions the TSOs of a Synchronous Area may deviate from the obligation set in Article 20(1)(a); and c) in case of High Synchronous Area State, the TSOs of a Synchronous Area shall perform predefined coordinated and individual actions of LFC Blocks, **in accordance with the network code on Emergency**, to actively reduce the Frequency Deviation. For these actions the TSOs of a Synchronous Area may deviate from the obligation set in Article 20(1) (a). d) The TSOs of a LFC Block shall reduce the absolute value of Frequency Restoration Control Error of the LFC Block by activation of FRR and RR. e) The TSOs of a LFC Block shall make best endeavours to avoid times with persisting Frequency Restoration Control Errors.	Reference to the network code on Emergency for defining "predefined coordinated actions of LFC Blocks". Also information on those actions need to be available to affected parties.
5	32	5	For these actions the TSO may require changes in active power production or consumption of generating and demand facilities within its Area within reasonable limits.	For these actions the TSO may require changes in active power production or consumption of generating and demand facilities within its Area within reasonable limits, while respecting the provisions of Article 3(3).	What are reasonable limits? This should be determined in a objective way. What about the financial consequences for involved parties?

5	32	5	All TSOs of a LFC Block shall define common rules for the operation of the FRPs in a TSO multiparty agreement respecting the common rules of the Synchronous Area while respecting the provisions of Article 3(3). a) The LFC Block Monitor shall inform the TSOs of the Synchronous Area about the current LFC Block Threshold state b) If the LFC Block exceeds the Level 1 LFC Block Threshold the TSOs of a LFC Block shall have the right to perform predefined additional actions to actively reduce the Frequency Restoration Control Error. c) If the LFC Block exceeds the Level 2 LFC Block Threshold the TSOs of a LFC Block shall perform predefined additional actions to actively reduce the Frequency Restoration Control Error. For these actions the TSO may require changes in active power production or consumption of generating and demand facilities within its Area within reasonable limits d) When the Frequency Restoration Control Error exceeds 25% of the Reference Incident of the Synchronous Area for more than 30 consecutive minutes, the TSOs of a LFC Block shall perform predefined measures and predefined coordinated actions involving other LFC Blocks at least comprising emergency reserve exchanges to actively reduce the Frequency Restoration Control Error.	All TSOs of a LFC Block shall define common rules for the operation of the FRPs in a TSO multiparty agreement respecting the common rules of the Synchronous Area while respecting the provisions of Article 3(3) and the network code on Electricity Balancing. a) The LFC Block Monitor shall inform the TSOs of the Synchronous Area about the current LFC Block Threshold state b) If the LFC Block exceeds the Level 1 LFC Block Threshold the TSOs of a LFC Block shall have the right to perform predefined additional actions, **in accordance to the Emergency Network code and by informing the affected parties,** to actively reduce the Frequency Restoration Control Error. c) If the LFC Block exceeds the Level 2 LFC Block Threshold the TSOs of a LFC Block shall perform predefined additional **in accordance to the Emergency Network code and by informing the affected parties,** actions to actively reduce the Frequency Restoration Control Error. For these actions the TSO may use bids available on the balancing market; d) When the Frequency Restoration Control Error exceeds 25% of the Dimensioning Incident of the Synchronous Area for more than 30 consecutive minutes, the TSOs of a LFC Block shall perform predefined measures **in accordance to the Emergency Network code and by informing the affected parties** and predefined coordinated actions **in accordance to the Emergency Network code and by informing the affected parties** involving other LFC Blocks at least comprising emergency reserve exchanges to actively reduce the Frequency Restoration Control Error.	Reference to the network code on Electricity Balancing (for point c) and to Emergency NC should be made. Finally typo error in §5 d) it should refer to the Dimensioning Incident.

Chapter 6 - Replacement Reserves (RR)					
6	33	3	In case a TSO has RR, the dimensioning based on the System Imbalances shall apply for the combination of FRR and RR. However, the Dimensioning Incident shall be covered by FRR only.	In case a TSO has **contracted** RR, the dimensioning based on the System Imbalances shall apply for the combination of FRR and RR. However, the Dimensioning Incident shall be covered by FRR only.	Reference to the network code on Electricity Balancing where TSO have to contract and procure reserves.
6	33	5	All TSOs of a LFC Block with a Replacement Process shall have sufficient RR Capacity according to the RR Dimensioning Rules at any time. In case of insufficient RR Capacity due to market illiquidity an escalation procedure shall be agreed by the TSOs of each LFC Block with the relevant NRAs while respecting the provisions of Article 3(3).	All TSOs of a LFC Block with a Replacement Process shall procured **according to principles established in the Balancing Network Code** sufficient RR Capacity according to the RR Dimensioning Rules at any time.	Reference to the network code on Electricity Balancing where TSO have to contract and procure reserves. The reference to market illiquidity is not acceptable in this LFC code that only looks at the technical aspects, market design which will be defined in network code on Electricity Balancing and/or Emergency
6	33	6	A TSO which has implemented a RRP according to Article 16(2) shall respect the RR Dimensioning Rules. All TSOs of a LFC Block shall agree in a TSO multi-party agreement on the specific allocation of responsibilities between TSOs of different LFC Areas for the implementation of the obligations if the process is needed by a LFC Block.	**While respecting the provisions of Article 3(3),** a TSO which has implemented a RRP according to Article 16(2) shall respect the RR Dimensioning Rules. All TSOs of a LFC Block shall agree in a **on ENTSO-E website publicly available** TSO multi-party agreement on the specific allocation of responsibilities between TSOs of different LFC Areas for the implementation of the obligations if the process is needed by a LFC Block.	TSO multi-party agreement should be publicly available and under NRA approval and market parties consultation.
6	34		RR Technical Minimum Requirements	RR Operation **and Technical Minimum Requirements**	Article 34 refer to RR operation and no RR technical minimum requirements are defined. [Minimum requirements listed in Art. 34.2]
6	34	1	Each TSO of a LFC Block shall have the right to operate Replacement Reserves Capacity to ensure that its FRR Capacity is sufficient to respect the values defined for the Frequency Restoration Control Error Target Parameters in accordance with Article 10 based on theoretical considerations defined in Article 31(3) while respecting the provisions of Article 3(3).	Each TSO of a LFC Block shall have the right to operate contracted Replacement Reserves Capacity to ensure that its FRR Capacity is sufficient to respect the values defined for the Frequency Restoration Control Error Target Parameters in accordance with Article 10 based on theoretical considerations defined in Article 31(3), while respecting the provisions of Article 3(3).	Reference to the network code on Electricity Balancing where TSO have to contract and procure reserves.

6	34	2	c) supply of real-time measurements of activated RR and the relevant reference power production or consumption to the Reserve Connecting TSO fr each RR Providing Unit	c) supply of real-time measurements **at the Connection Point** of activated RR and the **? relevant reference ? p**ower production or consumption to the Reserve Connecting TSO fr each RR Providing Unit	Measurements to be precised at the Connection Point, and also to be clarified what is exactly the relevant reference power production.
6	34	2	b) activation of the complete RR Amount within the RR Full Activation Time; and	b) activation of the complete RR Amount within the RR Full Activation Time; and	It Is not clear how much the activation time is for the replacement reserve.
6	34	2	c) supply of real-time measurements of activated RR and the relevant reference power production or consumption to the Reserve Connecting TSO for each RR Providing Unit. RR Providers and RR Providing Units shall fulfil their respective RR Technical Minimum Requirements of the Reserve Connecting TSO.	c) **Measurement of** real-time measurements of activated RR and the relevant reference power production or consumption by the Reserve Connecting TSO for each RR Providing Unit or Providing group. RR Providers and RR Providing Units shall fulfil their respective RR Technical Minimum Requirements of the Reserve Connecting TSO.	That has been proven already by the compliance testing of the RfG and the qualification of the RR Providing Unit. If the Connecting TSO wants to do that he is free to do that at the grid connection point in his substation. Almost all equipment to do so exists there. RR Providers may need to prove it on request. If the RR power is provided by more than one Providing unit, than the information can be based on the group measurements.
6	34	2	Each TSO of a LFC Block which has implemented a RRP according to Article 16(2) shall define in a multi-lateral agreement RR Technical Minimum Requirements while respecting the provisions of Article 3(3). The RR Technical Minimum Requirements for RR Providing units and RR Providers shall comprise at least the following requirements:	Each TSO of a LFC Block which has implemented a RRP according to Article 16(2) shall define in a multi-lateral agreement RR Technical Minimum Requirements while respecting the provisions of Article 3(3). The RR Technical Minimum Requirements for RR Providing units and RR Providers shall comprise at least the following requirements:	The possibility of setting up additional requirements by TSOs will lead to heterogeneous requirements for Reserve Providing Units within and across different synchronous areas. The development of a cross border market for reserves would however imply a harmonised set of requirements for all reserve providing units. Therefore, all technical requirements should explicitly be defined in the LFCR without an option of setting up more stringent requirements. Beware of competition distortion.
6	34	3	The reserve Connecting TSO shall have the right to define additional requirements for RR Providing Groups and shall have the right to exclude RR Providing Groups from the provision of RR based on technical arguments to ensure operational security.	The reserve Connecting TSO shall have the right to define additional requirements for RR Providing Groups and shall have the right to exclude RR Providing Groups from the provision of RR based on technical arguments to ensure operational security, **while respecting the provisions of Article 3(3).**	Who will guard the interest of RR Providing Groups. As it is defined now TSO have full space to defined extra requirements and exclude parties from RR Provision, without any approval of the NRA.

6	34	3	The Reserve Connecting TSO shall have the right to define additional requirements for RR Providing Groups and shall have the right to exclude RR Providing Groups from the provision of RR based on technical arguments to ensure operational security. The RR Provider shall ensure that monitoring of the RR activation of the generating and/or demand facilities within a Reserve Providing Group is possible. Each Reserve Connecting TSO shall ensure that its RR Providing Units fulfil the RR technical requirements by means of a RR Prequalification Process. Each Reserve Connecting TSO shall ensure that for its RR Providing Units the fulfilment of the RR Technical Requirements is monitored. A FRR Provider shall activate the FRR on its FRR Providing Unit or FRR Providing Group according to the request by the TSO.	The Reserve Connecting TSO shall have the right to define additional requirements for RR Providing Groups and shall have the right to exclude RR Providing Groups from the provision of RR based on technical arguments to ensure operational security. The RR Provider shall ensure that monitoring of the RR activation of the generating and/or demand facilities within a Reserve Providing Group is possible. Each Reserve Connecting TSO shall ensure that its RR Providing Units fulfil the RR technical requirements by means of a RR Prequalification Process. Each Reserve Connecting TSO shall ensure that for its RR Providing Units the fulfilment of the RR Technical Requirements is monitored. A RR Provider shall activate the RR on its RR Providing Unit or RR Providing Group according to the request by the TSO.	Typo Error FRR for RR in the last sentence
6	34	4	A RR Provider shall comply with the RR Availability Requirements defined by its Reserve Connecting TSO in the RR Prequalification Process. A RR Provider shall inform its Reserve Connecting TSO immediately about an unavailability of its RR Providing Unit.	Delete	This is not clear. Otherwise, to be deleted.
6	34	4	A RR Provider shall comply with the RR Availability Requirements defined by its Reserve Connecting TSO in the RR Prequalification Process. A RR Provider shall inform its Reserve Connecting TSO immediately about an unavailability of its RR Providing Unit.	A RR Provider shall comply with the RR Availability Requirements defined by its Reserve Connecting TSO in the RR Prequalification Process. A RR Provider shall inform its Reserve Connecting TSO immediately about an unavailability of t**he contractual agreed RR Capacity.**	That is only necessary when a lack of RR Capacity would occur. In other cases it is not necessary to create effort. But it needs to be documented if a prove is necessary.

Chapter 7 - Exchange and Sharing of Reserves					
7	35	1	Each TSO shall have the right to exchange part of its initial FCR Obligation defined in accordance with Article 27(1) with other TSOs of its Synchronous Area in accordance with the provisions of this Article.	Each TSO shall have the right to exchange part of its initial FCR Obligation defined in accordance with Article 27(1) with other TSOs of its Synchronous Area in accordance with the provisions of this Article. **FCR providers connected to these other TSOs** shall have the right to participate to such TSO FCR tendering, **respecting the provisions of the Balancing Network Code.**	It should be specified that under the assumption "TSO-TSO with CMO" target model, FCR providers should have access to FCR auctions.
7	35	2	Table 4: TSOs of LFC Areas of Adjacent LFC Blocks	Please explain what the 100 MW are (load, installed generation)? The regional situations of load and generation and congestions on overhead lines need to be taken into account.	The proposed text should be formulated clearer. Export and Import of FCR should follow the same rules and limits. The second and third part aren't necessary. There shouldn't be an export limit to guarantee a liquid market. It needs to be ensured that FCR is well distributed in the Synchronous Area in case of a split into different isolated grid in case of an incident i.e. .
7	35	2	table: "avoid internal congestions or issues with network splitting"	avoid internal congestions **in case of FCR activation or ?????**	it should be made clear that it is about internal congestions due to FCR activation; also the "issues with network splitting" should be clarified, we understand that the aim is to say that in case of network splitting, there should still be an appropriate distribution of FCR, but that should be clarified ! NOTE: same amendment needed for the table under article 39 and 41 : please duplicate !
7	35	2	- the TSOs of a LFC Block shall secure, that part of its Initial FCR Obligation, according to Article 27(1), is provided inside the LFC Block. As a minimum 30 % of the Initial FCR Obligation shall be kept inside the LFC Block	- the TSOs of a LFC Block shall secure, that part of its Initial FCR Obligation, according to Article 27(1), is provided inside the LFC Block. As a minimum **10 %** of the Initial FCR Obligation shall be kept inside the LFC Block	The proposed Text by ENTSO-E should be formulated clearer. Export and Import of FCR should follow the same rules and limits. the second and third part aren't necessary.

7	35	2	- the total FCR Obligation that the TSOs of a LFC Block fulfil for TSOs of Adjacent LFC Blocks shall be limited to 30% of the sum of the Initial FCR Obligations, according to Article 27(1), of the TSOs of the LFC Block.	Delete	The proposed Text by ENTSO-E should be formulated clearer. Export and Import of FCR should follow the same rules and limits. the second and third part aren't necessary. There shouldn't be an export limit to guarantee a liquid market
7	35	2	- In case the 30% of the sum of the Initial FCR Obligations of the TSOs of the LFC Areas constituting a LFC Block is less than 100 MW, this limit is set by default to 100 MW.	delete	The proposed Text by ENTSO-E should be formulated clearer. Export and Import of FCR should follow the same rules and limits. the second and third part aren't necessary. The limit of 100MW is set too small in case that one LFC Area has got more potential FCR
7	35	2	The TSOs of the LFC Areas constituting a LFC Block shall set internal limits in a TSO multi-party agreement while respecting the provisions of Article 3(3), for the exchange of FCR between the LFC Areas of the LFC Block as to: o avoid internal congestions or issues in case of network splitting; and o avoid that the stability of the FCP or the Operational Security is affected.	Delete	See justification of Art. 35 Para. 2 above
7	35	4	All TSOs of a Synchronous Area shall define, in a Synchronous Area Agreement, a common threshold for the impact of the exchange of FCR Obligation on the cross-border flows in case of FCR activation and inform the NRA(s) while respecting the provisions of Article 3(3).	All TSOs of a Synchronous Area shall define, in a Synchronous Area Agreement, a **on ENTSO-E website published** common threshold for the impact of the exchange of FCR Obligation on the cross-border flows in case of FCR activation and get the NRA(s) approbal after a public consultation while respecting the provisions of Article 3(3).	Common threshold should need NRA approval and public consultation.

7	35	5	Each Affected TSO shall ensure that its transmission reliability margin is sufficient to enable the planned exchange of FCR Obligations and ensures the operational security	Each Affected TSO, **with respect to the principles and methodologies as set in place by the Network Code for Capacity Allocation and Congestion Management,** shall ensure that its transmission reliability margin is sufficient to enable the planned exchange of FCR Obligations and ensures the operational security. The TSOs shall report exante and expost on capacity foreseen and used for the exchange of FCR obligations.	We recognise that the reliability margin is reserved to allow exchange of FCR, but it should be explicitly related to the principles of Capacity Calculation. Transparency is necessary with regards to the use of reliability margins for exchange of FCR obligations.
7	37	2	Sufficient cross-border transmission capacity must be available for the cross-border exchange of FRR/RR. The Reserve Connecting TSO and Reserve Receiving TSO shall agree on the identity of the TSO responsible to secure and ensure before real-time the availability of sufficient transmission capacity for the exchange of FRR/RR in a TSO multi-party agreement.	Sufficient cross-border transmission capacity must be available for the cross-border exchange of FRR/RR. The Reserve Connecting TSO and Reserve Receiving TSO shall agree on the identity of the TSO responsible to secure and ensure before real-time the availability of sufficient transmission capacity for the exchange of FRR/RR in **a on ETNSO-E website publicly available** TSO multi-party agreement, while respecting the provisions of Article 3(3),	TSO multi-party agreement should be publicly available and under NRA approval and market parties consultation. [Need for clarification/precision on the following expressions: "Sufficient cross-border transmission capacity must be available", "secure and ensure before real-time the availability of sufficient transmission capacity". No cross-border capacity should be reserved.]
7	37	6	In case of the exchange of FRR/RR, each TSO of a LFC Block shall have the right to limit the amount of its FRR/RR that can be located outside its LFC Area in a multi-party agreement with other TSOs of the LFC Block according to the provision of Article 3(3).	Delete	This article is not needed, it is already covered in article 39.2 and 41.2
7	38	3	The Reserve Receiving TSO shall not activate the shared FRR/RR in case insufficient transmission capacity is available. The Reserve Receiving TSO is responsible to ensure the availability of sufficient transmission capacity required for the activation of shared FRR/RR.	The Reserve Receiving TSO shall not activate the shared FRR/RR in case insufficient transmission capacity is available ***according to the methodology defined in network code on Electricity Balancing***. The Reserve Receiving TSO is responsible to ensure the availability of sufficient transmission capacity required for the activation of shared FRR/RR.	Reference should be made to NC EB for the calculation of transmission capacity.

7	39	1	Each TSO shall have the right to exchange part of its FRR with other TSOs of its Synchronous Area in accordance with the provisions of this Article and Article 37.	Each TSO shall have the right to exchange part of its FRR with other TSOs of its Synchronous Area in accordance with the provisions of this Article and Article 37. **Each FRR providers shall have the right to participate to each TSO FRR tendering.**	It should be specified that under the assumption "TSO-TSO with CMO" target model, FCR providers should have access to FCR auctions.
7	39	2	Table 5.	Table 5.	The exchange of reserve capacities should not be limited too much as this would unnecessarily decrease the liquidity of the market and increase the cost of ancillary services .
7	39	2	The TSOs of a LFC Block shall ensure that at least 50% of their total FRR, resulting from the FRR Dimensioning Process according to Article 30(1), remains located within their LFC Block.	The TSOs of a LFC Block shall ensure that at least **10%** of their total FRR, resulting from the FRR Dimensioning Process according to Article 30(1), remains located within their LFC Block.	The exchange of reserve capacities should not be limited too much as this would unnecessarily decrease the liquidity of the market and increase the cost of ancillary services .
7	39	2	The limits for cross-border exchange of FRR within a Synchronous Area shall not apply for the exchange of FRR supplementary to the FRR resulting from the FRR Dimensioning Process according to Article 30(1).		Need for clarification/precision on the following expression: "FRR supplementary". Could be tackled in Article 30. Link with Article 40(1) .
7	39	2 (Table 5)	…Avoid internal congestions or issues in case of network splitting; and …		it should be made clear that it is about internal congestions due to FCR activation; also the "issues with network splitting" should be clarified, we understand that the aim is to say that in case of network splitting, there should still be an appropriate distribution of FCR, but that should be clarified !
7	41	1	Each TSO shall have the right to exchange part of its RR with other TSOs of its Synchronous Area in accordance with the provisions of this Article and Article 37.	Each TSO shall have the right to exchange part of its RR with other TSOs of its Synchronous Area in accordance with the provisions of this Article and Article 37. **Each RR providers shall have the right to participate to each TSO RR tendering.**	It should be specified that under the assumption "TSO-TSO with CMO" target model, FCR providers should have access to FCR auctions.
7	41	3	Table 6	Table 6	The exchange of reserve capacities should not be limited too much as this would unnecessarily decrease the liquidity of the market and increase the cost of ancillary services.

7	41	3	The TSOs of the LFC Areas constituting a LFC Block shall ensure that at least 50% of their RR, resulting from the RR Dimensioning Process according to Article 33(1), remains located within their LFC Block.	The TSOs of the LFC Areas constituting a LFC Block shall ensure that at least **10%** of their RR, resulting from the RR Dimensioning Process according to Article 33(1), remains located within their LFC Block.	The exchange of reserve capacities should not be limited too much as this would unnecessarily decrease the liquidity of the market and increase the cost of ancillary services.
7	42	2	The TSOs of a LFC Block shall only consider a reduction of the required RR for the LFC Block, defined by the RR Dimensioning Process of Article 33, as a result of a RR sharing agreement after verifying, together with the Reserve Connecting TSO(s), that the probability of the simultaneous need for the shared RR capacity by more than one TSO is very unlikely to happen according to Article 3(3).	The TSOs of a LFC Block shall only consider a reduction of the required RR for the LFC Block, defined by the RR Dimensioning Process of Article 33, as a result of a RR sharing agreement after verifying, together with the Reserve Connecting TSO(s), that the probability of the simultaneous need for the shared RR capacity by more than one TSO will not happen **more than X% of the time based on common methodology and approved by regulators** according to Article 3(3).	Reference to "very unlikely" is not acceptable for a network code. It is impossible to assess it. Methodologies need to be defined.
7	41	3 (Table 6)	…Avoid internal congestions or issues in case of network splitting; and …		it should be made clear that it is about internal congestions due to FCR activation; also the "issues with network splitting" should be clarified, we understand that the aim is to say that in case of network splitting, there should still be an appropriate distribution of FCR, but that should be clarified.
7	44	2	All TSOs of the Synchronous Area shall define rules and minimum requirements for exchange of FCR between Synchronous Areas in a multi-party agreement. The rules and minimum requirements shall cover at least a) the operational impact between the Synchronous Areas; and b) the impact on the frequency quality of the involved Synchronous Areas.	All TSOs of the Synchronous Area shall define rules and minimum requirements for exchange of FCR between Synchronous Areas in a multi-party agreement, while respecting the provisions of Article 3(3). The rules and minimum requirements shall cover at least a) the operational impact between the Synchronous Areas; and b) the impact on the frequency quality of the involved Synchronous Areas.	TSO multi-party agreement should be publicly available and under NRA approval and market parties consultation.

7	44	3	The Reserve Connecting TSO and the Reserve Receiving TSO shall agree in a TSO multi-party agreement upon the exchange of FCR Obligation.	While respecting the provisions of Article 3(3), the Reserve Connecting TSO and the Reserve Receiving TSO shall agree in a **on ENTSO-E website publicly available** TSO multi-party agreement upon the exchange of FCR Obligation.	TSO multi-party agreement should be publicly available and under NRA approval and market parties consultation.
7	46	1	The TSOs of the LFC Blocks involved in the different Synchronous Areas shall have the right to exchange FRR. For the exchange of FRR between Synchronous Areas, the provisions contained in Article 38 shall apply.	The TSOs of the LFC Blocks involved in the different Synchronous Areas shall **allow for** exchange of FR**R either between TSOs or between a TSO and FRR provider.** For the exchange of FRR between Synchronous Areas, the provisions contained in Article 38 shall apply.	According to this article, only a TSO can exchange its FRR capacity, not a FRR provider. But also the TSO-BSP model will be possible under the balancing network code, an this should be reflected here. If not reflected, this could lead to TSOs considering that the TSO-BSP model cannot be implemented under this Code. Excluding on principle this possibility for a TSO-BSP model in this Code would be in contradiction with the internal market rules (including with the provisions of the 3rd Directive and the rules on free movement).
7	46	2	All TSOs participating to an exchange of FRR shall organise the cross-border exchange in such a way that the TSO of a first Synchronous Area may receive part of the FRR Capacity as defined in accordance with Article 31 within the second Synchronous Area. The part of the FRR Capacity which is exchanged shall be provided within an LFC Block of the second Synchronous Area in addition to the FRR Capacity of this LFC Block of the second Synchronous Area as defined in accordance with Error! Reference source not found.. Each operator of a HVDC interconnector shall control the Active Power Flow over the HVDC interconnector depending on the set point of the first Synchronous Area in accordance with the FRR requirements established in Article 31.	All TSOs participating to an exchange of FRR shall organise the cross-border exchange in such a way that the TSO of a first Synchronous Area may receive part of the FRR Capacity as defined in accordance with Article 31 within the second Synchronous Area. The part of the FRR Capacity which is exchanged shall be provided within an LFC Block of the second Synchronous Area in addition to the FRR Capacity of this LFC Block of the second Synchronous Area. Each operator of a HVDC interconnector shall control the Active Power Flow over the HVDC interconnector depending on the set point of the first Synchronous Area in accordance with the FRR requirements established in Article 31.	Typo error

7	46	3	The TSOs of the LFC Block involved in the different Synchronous Areas shall agree upon the exchange of FRR in a multi-party agreement.	While respecting the provisions of Article 3(3), the TSOs of the LFC Block involved in the different Synchronous Areas shall agree upon the exchange of FRR in a **on ENTSO-E website publicly available** multi-party agreement.	TSO multi-party agreement should be publicly available and under NRA approval and market parties consultation.
7	47	1	Each TSO of a LFC Block shall have the right to share part of its FRR with a TSO from another Synchronous Area in accordance with the rules established in Article 40(1) **to Article 40(0).**	Each TSO of a LFC Block shall have the right to share part of its FRR with a TSO from another Synchronous Area in accordance with the rules established in Article 40(1).	Typo error
7	50		Section 3 CROSS-BORDER ACTIVATION PROCESS OF FRR AND RR FOR OPTIMISATION PURPOSES	Section 3 CROSS-BORDER ACTIVATION PROCESS OF FRR AND RR	Inappropriate reference to optimization purposes. It should be part of the network code on Electricity Balancing.
7	50		CROSS-BORDER ACTIVATION PROCESS OF FRR AND RR FOR OPTIMIZATION PURPOSES	CROSS-BORDER ACTIVATION PROCESS OF FRR AND RR	Inappropriate reference to optimization purposes. It should be part of the network code on Electricity Balancing.
7	50	1	Each TSO shall have the right to make part of its FRR or RR available to other TSOs of its Synchronous Area or from another Synchronous Area, regardless of any exchange and/or sharing agreement for FRR / RR, in order to optimize the activation of FRR or RR balancing energy in accordance with the provisions of the [NC Balancing].	Each TSO shall have the right to make part of its FRR or RR available to other TSOs of its Synchronous Area or from another Synchronous Area, regardless of any exchange and/or sharing agreement for FRR / RR**, in order to reduce the balancing costs for the market** in accordance with the provisions of the Network Code on Electricity Balancing.	Inappropriate reference to optimization purposes. It should be defined in the network code on Electricity Balancing.
7	50	2	All TSOs of the Synchronous Area shall set limits in a Synchronous Area Agreement to the amount of FRR or RR which can be made available to other TSOs in accordance with Article 50 in order to ensure the continuous access to the required FRR or RR resulting from their FRR or RR Dimensioning Process while respecting the provisions of Article 3(3).	All TSOs of the Synchronous Area shall set limits in a **on ENTSO-E website publicly available** Synchronous Area Agreement to the amount of FRR or RR which can be made available to other TSOs in accordance with Articles 39, 41, 42 and 50 in order to ensure the continuous access to the required FRR or RR resulting from their FRR or RR Dimensioning Process while respecting the provisions of Article 3(3).	Relation with articles 39, 41 and 42 should be made. There is a link with the limits set up for exchange/sharing of reserves. We also need transparency on this issue.

7	50	5	New paragraph under article 50	**TSO shall make on a daily basis publicly available on the ENTSO-E website for each market time unit the amounts of reserves (FRR, RR) activated in other LFC Blocks and the name of the LFC block where reserves have been activated, this together with the amounts of reserves activated in their own area.**	The market needs sufficient transparency how reserves are shared and exchanged. This could also be under the chapter transparency (for the activation)
7	51		Time Control Process	TO DELETE	The need for Time Control Process is questionable
10	53	2	All TSOs shall have the right to define parameters and implement processes and methodologies without complying with publication timeframes defined in Article 54, Article 55, Article 56, Article 57 and Article 58 if required for the maintenance of Operational Security.	Delete	Out of the scope and wording completely opaque and open.
10	53	4	The publication of the information required in Article 54, Article 55, Article 56, Article 57 , Article 58 and Article 59 shall at least be published in English language.	The publication of the information required in Article 54, Article 55, Article 56, Article 57 , Article 58 and Article 59 shall **be published in a common website and** at least in English language.	Simpler reference to a common website in Art. 53 instead of referring to it in each article below.
Chapter 10 - Transparency					
	54	1	All TSOs of each Synchronous Area shall publish on a common public website a) the Frequency Quality Defining Parameters; b) the Frequency Quality Target Parameters; c) the Frequency Restoration Control Error Defining Parameters; and d) the Frequency Restoration Control Error Target Parameters for each Synchronous Area not later than	**ENTSO-E** shall publish on a common public website and for each Synchronous Area a) the Frequency Quality Defining Parameters; b) the Frequency Quality Target Parameters; c) the Frequency Restoration Control Error Defining Parameters; and d) the Frequency Restoration Control Error Target Parameters for each Synchronous Area not later than	Reference to ENTSO-E transparency platform. Only one website should be used to publish this information.

10	54	2	All TSOs of each Synchronous Area shall publish on a common public website the results of the Criteria Application Process comprising at leasta) the values of the Frequency Quality Evaluation Criteria;b) the measurement period;c) the precision of the recorded measurements; andd) the calculation methodfor each Synchronous Area not later than six months after the last time stamp of the measurement period and at least four times a year.	**ENTSO-E** shall publish on a common public website and for each Synchronous Area the results of the Criteria Application Process comprising at leasta) the values of the Frequency Quality Evaluation Criteria;b) the measurement period;c) the precision of the recorded measurements; andd) the calculation methodfor each Synchronous Area not later than six months after the last time stamp of the measurement period and at least four times a year.	Reference to ENTSO-E transparency platform. Only one website should be used to publish this information.
10	55	1	All TSOs of each Synchronous Area shall publish on a common public website the content of the Synchronous Area A referred to in Article 16 and related to a) the Process Activation Structure; and b) the Process Responsibility Structure for each Synchronous Area not later than one month before the entry into force of the Synchronous Area Agreement.	**ENTSO-E** shall publish on a common public website and for each Synchronous Are the content of the Synchronous Area **Agreement** referred to in Article 16 not later than six months before the entry into force of the Synchronous Area Agreement.	Reference to ENTSO-E transparency platform. Only one website should be used to publish this information. Typo Error. Review timing for communication information on public website. [Simpler wording: reference to Art. 16 already sets the scope of the publication]
10	55	3	All TSOs implementing an Imbalance Netting Process shall announce the implementation on their public websites not later than one month before the beginning of the operation.	All TSOs implementing an Imbalance Netting Process shall announce the start date on their public websites not later than six months before the beginning of the operation, **and the start date should be notified to reserve providers that participate in procurement processes for FRR and RR before the procurement process starts.**	More precise to change the term "implementation" by "starting date". Otherwise it can be confusing. Also market participants need more time before the beginning of the operation in order to implement the changes internally. Six months seems more reasonable, but all procurement contracts should be contain already information about the launch date!.

10	56	1	All TSOs of each Synchronous Area except the Synchronous Area IRE shall publish on a common public website a) the dimensioning approach for FCR; b) the total amount of FCR for each Synchronous Area; and c) the shares of FCR required for each TSO as the Initial FCR Obligation for each Synchronous Area not later than one month before the effective date of the decision referred to in Article 27.	All TSOs of each Synchronous Area except the Synchronous Area IRE shall publish on a common public website a) the dimensioning approach for FCR; b) the total amount of FCR for each Synchronous Area; and c) the shares of FCR required for each TSO as the Initial FCR Obligation for each Synchronous Area not later than **six** months before the effective date of the decision referred to in Article 27.	Review timing for communication information on public website.
10	56	2	All TSOs of each Synchronous Area shall publish on a common public website the FCR Properties defined for each Synchronous Area according to Article 28 not later than one month before the effective date of the decision.	All TSOs of each Synchronous Area shall publish on a common public website the FCR Properties defined for each Synchronous Area according to Article 28 not later than **six** months before the effective date of the decision.	Market participants need more time before the beginning of the operation in order to implement the changes internally. Six months seem more reasonable.
10	57	1	All TSOs of each Synchronous Area shall publish on a common public website the FRR Technical Requirements for each Synchronous Area not later than one month before the effective date of the decision referred to in Article 31(1).	All TSOs of each Synchronous Area shall publish on a common public website the FRR Technical Requirements for each Synchronous Area not later than **six** months before the effective date of the decision referred to in Article 31(1).	Review timing for communication information on public website.
10	57	2	All TSOs of each LFC Block shall publish on a common public website the complementary FRR Technical Requirements and FRR Availability Requirements for the LFC Block not later than one month before the entry into force of the TSO multi-party agreement referred to in Article 31(2).	All TSOs of each LFC Block shall publish on a common public website the complementary FRR Technical Requirements and FRR Availability Requirements for the LFC Block not later than **six** months before the entry into force of the TSO multi-party agreement referred to in Article 31(2).	Market participants need more time before the beginning of the operation in order to implement the changes internally. Six months seem more reasonable.
10	57	3	All TSOs of each LFC Block shall publish on a common public website the FRR Dimensioning Rules defined for the LFC Block not later than one month before the entry into force of the TSO multi-party agreement referred to in Article 30(1).	All TSOs of each LFC Block shall publish on a common public website the FRR Dimensioning Rules defined for the LFC Block not later than **six** months before the entry into force of the TSO multi-party agreement referred to in Article 30(1).	Market participants need more time before the beginning of the operation in order to implement the changes internally. Six months seem more reasonable.

10	58	1	All TSOs of each LFC Block which operates a Reserve Replacement Process shall publish on a common public website the RR Technical Requirements and RR Availability Requirements for the LFC Block not later than one month before the effective date of the entry into force of the TSO multi-party agreement referred to in Article 34(2).	All TSOs of each LFC Block which operates a Reserve Replacement Process shall publish on a common public website the RR Technical Requirements and RR Availability Requirements for the LFC Block not later than **six** months before the effective date of the entry into force of the TSO multi-party agreement referred to in Article 34(2).	Review timing for communication information on public website.
10	58	2	All TSOs of each LFC Block shall publish on a common public website the RR Dimensioning Rules defined for the LFC Block not later than one month before the entry into force of the TSO multi-party agreement referred to in Article 33(1).	All TSOs of each LFC Block shall publish on a common public website the RR Dimensioning Rules defined for the LFC Block not later than **six** months before the entry into force of the TSO multi-party agreement referred to in Article 33(1).	Market participants need more time before the beginning of the operation in order to implement the changes internally. Six months seem more reasonable.
10	59	3	All TSOs of each LFC Area or LFC Block shall publish the information on FCR, FRR and RR exchange in accordance to the national regulations.	All TSOs of each LFC Area or LFC Block shall publish the information on FCR, FRR and RR exchange in accordance to the national regulations **and European Transparency Regulation and Guidelines.**	Consistency with European Regulation and Guidelines on Electricity Transparency
Chapter 11 - Final provisions					
11	61		The implementation of the requirements defined in this NC and the agreement...	The implementation of the requirements **according to Articles X, Y, Z.**.. and the agreement…	More precision needed

DSO COMMENTS

Title				Proposed version	Justification text
1	2	1	The definitions contained in the Article [2] of the [NC RfG], [NC CACM], [NC DCC], [NC OS] and [NC OPS] shall also apply.	The definitions contained in the Article [2] of the [NC RfG], [NC CACM], [NC DCC], [NC OS] and [NC OPS] shall also apply. **For the definitions of Connection Point, Operational Security and Remedial Action, the definitions contained in [NC XX] shall apply**	Since the NC OS provides another definition for these three terms than the ones in NC RfG, NC DCC and NC CACM, it should be clarified to which NC(s) we have to refer for this NC LFCR. as well as in the applicability of the code. (NC OS states, for instance, that all generators shall comply with the operational requirements indicated in the code, instead of only to new generators, as indicated in all previous connection codes. Requirements to existing generation muss be subjected to public consultation and Cost-Benefits- Analysis (CBA), and only in case this is approved, then requirements shall be applicable to those generators analysed.)
1	2	2	Definitions of Area Control Error (ACE), Control Program, Frequency Containment Reserves (FCR), Frequency Deviation, Frequency Restoration Control Error, Frequency Restoration Process (FRP), K-Factor, Load Frequency Control Area (LFC Area), Load Frequency Control Block (LFC Block), Maximum Steady-State Frequency Deviation, Nominal Frequency, Synchronous Area, Synchronous Area Agreement, System Frequency, Time to Restore Frequency, Virtual Tie-Line	Delete and/or adapt	All same definitions as contained in NC OS, so should be deleted here. The ones which are not completely the same, should be separately mentioned.
1	2		Reserve Connecting TSO means the TSO responsible for the Monitoring Area to which a Reserve Providing Unit is connected to;	**Reserve Contracting TSO** means the TSO responsible for the Monitoring Area to which a Reserve Providing Unit is connected to;	Rename "Reserve Connecting TSO" to "Reserve Contracting TSO" and replace it in the whole document. Otherwise all statements that each provider can only have one connecting TSO would be senseless. Additionally, most of the reserves might be (physically) connected to a DSO-grid.

1	3	3	Where reference is made to this paragraph, the TSO shall, after consultation with its national regulatory authority, establish the terms and conditions or actions necessary to ensure Operational Security in accordance with the principles of transparency, proportionality and non-discrimination. The establishment of these terms and conditions or actions necessary to ensure Operational Security shall be performed in compliance with and respecting the TSO's responsibility to ensure system security according to national legislation.	Where reference is made to this paragraph, the TSO shall, after consultation with its national regulatory authority **and in coordination with DSOs if affected**, establish the terms and conditions or actions necessary to ensure Operational Security in accordance with the principles of transparency, proportionality and non-discrimination. The establishment of these terms and conditions or actions necessary to ensure Operational Security shall be performed in compliance with and respecting the TSO's responsibility to ensure system security according to national legislation.	If any aspects affect DSO network security, DSO should be involved. Article 31.11 of [NC OS] establishes that DSO is responsible for security in its network, so in order to be consistent, DSOs should be always considered when the DSO is affected.
1	4	1	The costs related to the obligations referred to in this Network Code which have to be borne by regulated Transmission System Operators shall be assessed by National Regulatory Authorities	The costs related to the obligations referred to in this Network Code which have to be borne by regulated Transmission System **Regulated Network** Operators shall be assessed by National Regulatory Authorities	DSO as regulated agent should be also given the possibility to recover its efficient costs derived from this legislation. The code should be consistent with other network codes, where costs for all regulated network operators are considered.
1	4	3	If requested to do so by National Regulatory Authorities, regulated Transmission System Operators shall, within three months of such a request, use best endeavours to provide such additional information as reasonably requested by National Regulatory Authorities to facilitate the assessment of the costs incurred.	If requested to do so by National Regulatory Authorities, regulated Transmission System **Regulated Network** Operators shall, within three months of such a request, use best endeavours to provide such additional information as reasonably requested by National Regulatory Authorities to facilitate the assessment of the costs incurred.	Same as 1.4.1
3	whole chapter	whole chapter	Clarification needed	Clarification needed	Some reference should be made to article 9 of NC OS: Frequency control management.
3	19	add 3	Clarification needed	Clarification needed	Some reference should be made to the DSR SFC in NC DCC (art. 21 and 23) as this develops a FCP.
4	27		what it applies	what it applies	Some reference should be made to the DSR SFC in NC DCC (art. 21 and 23) as this develops a FCP.

4	28	4	The Reserve Connecting TSO shall have the right to define additional requirements for FCR Providing Groups and shall have the right to exclude FCR Providing Groups from the provision of FCR based on technical arguments to ensure operational security.	The Reserve Connecting **All** TSOs, **in coordination with DSO when affected**, shall have the right to define additional requirements for FCR Providing Groups and shall have the right to exclude FCR Providing Groups from the provision of FCR based on technical arguments to ensure operational security.	In an harmonized market, requirements should be the same for everyone, so should be agreed among TSOs. For requirements related to distribution network capabilities and security, DSO should be involved in the process.
4	28	9	Each Reserve Connecting TSO shall monitor all FCR Providing Units in its Area. Each FCR Provider shall make available to the Reserve Connecting TSO for each of its FCR Providing Units at least the following information: a) status signal indicating if FCR is on or off; b) time-stamped scheduled active power output; c) time-stamped instantaneous active power; d) time-stamped instantaneous active power without FCR activation; and e) drop of the governor; On request from the Reserve Connecting TSO, a FCR Provider has to make this information available in real time with a time resolution of at least 10 seconds.	Each Reserve Connecting TSO shall monitor all FCR Providing Units in its Area. Each FCR Provider shall make available to the Reserve Connecting TSO for each of its FCR Providing Units at least the following information: a) status signal indicating if FCR is on or off; b) time-stamped scheduled active power output; c) time-stamped instantaneous active power; d) time-stamped instantaneous active power without FCR activation; and e) drop of the governor; On request from the Reserve Connecting TSO, a FCR Provider has to make this information available **through real time channels defined in NC OS** with a time resolution of at least 10 seconds.	No new real time channels should be created. NC OS is the umbrella code for the System Operation Codes. All requirements on data exchange are listed in the NC OS, so it is better to make reference to that NC.
4	29	4	Each TSO shall require from its FCR Provider the continuous availability of FCR with the exception of an unplanned outage of a Reserve Providing Unit. A FCR Provider shall comply with this availability requirement. A FCR Provider shall inform its Reserve Connecting TSO immediately about an unavailability of a FCR Providing Unit or all or a part of a FCR Providing Group.	Each TSO shall require from its FCR Provider the continuous availability of FCR with the exception of an unplanned outage of a FCR Providing Unit. A FCR Provider shall comply with this availability requirement. A FCR Provider shall inform its Reserve Connecting TSO immediately about an unavailability of a FCR Providing Unit or all or a **significant** part of a FCR Providing Group.	When talking of a group of small units, the provider should only inform when its capabilities are affected, not always whenever one of the small units is unavailable.
5	31	1.c	A FRR Provider shall be capable to supply real-time measurements to the Reserve Receiving TSO for each FRR Providing Unit and for each generating unit or demand facility larger than 1 MW being part of a FRR Providing Group	A FRR Provider shall be capable to supply real-time measurements **as described in NC OS** to the Reserve Receiving TSO for each FRR Providing Unit and for each generating unit or demand facility larger than 1 MW being part of a FRR Providing Group	No new real time channels should be created. NC OS is the umbrella code for the System Operation Codes. For demand aggregator NC OS establishes close to real time channels.

5	31	2	A Reserve Connecting TSO Shall have the right to define complementary technical minimum requirements...	A Reserve Connecting **All** TSOs, **in coordination with DSO when affected** Shall have the right to define complementary technical minimum requirements...	In an harmonized market, requirements should be the same for everyone, so should be agreed among TSOs. For requirements related to distribution network capabilities and security, DSO should be involved in the process.
5	31	2	The reserve connecting TSO shall have the right to define additional requirements for FRR Providing Groups...	The reserve connecting **All** TSOs, **in coordination with DSO when affected** shall have the right to define additional requirements for FRR Providing Groups...	In an harmonized market, requirements should be the same for everyone, so should be agreed among TSOs. For requirements related to distribution network capabilities and security, DSO should be involved in the process.
6	34	2c	supply of real-time measurements of activated RR...	supply of real-time measurements **as established in O**S of activated RR...	No new real time channels should be created. NC OS is the umbrella code for the System Operation Codes. For demand aggregator NC OS establishes close to real time channels.
6	34	3	The Reserve Connecting TSO shall have the right to define additional requirements…	The Reserve Connecting **All TSOs, in coordination with DSOs when affected** shall have the right to define additional requirements…	In an harmonized market, requirements should be the same for everyone, so should be agreed among TSOs.
Chapter 9- Co-operation with DSO					
	52	(1)	Two months before the Prequalification of a Reserve Providing Unit or Reserve Providing Group connected to a distribution network, the responsible Provider shall inform its Reserve Connecting DSO of:	**Three months** before the Prequalification of a Reserve Providing Unit or Reserve Providing Group connected to a distribution network, the responsible Provider shall inform its Reserve Connecting DSO **and any other DSO in serial of the electrical link to the TSO grid** of:	Two months are not sufficient for the Reserve Connecting DSO for its security analysis, more time should be allowed. There might be situations where the reserve connecting DSO itself is not directly coupled to the TSO grid but via another DSO. In this case, there might be congestions issues in the grid of the higher-level DSO which prevent delivering of reserves.

9	52	(2)	Within one month from the delivery of the information referred to in Article 52(1), each Reserve Connecting DSO shall have the right, on the basis of a security analysis, to object to the use by the TSO of such reserve or set limits to the volume delivered of such reserve to the TSO while respecting the provision of Article 3(3).	Within two months from the delivery of the information referred to in Article 52(1), each Reserve Connecting DSO shall have the right, on the basis of a security analysis, to object to the use by the TSO of such reserve or set limits to the volume delivered of such reserve to the TSO. Objection/limitation can be raised by the Reserve Connecting DSO anytime network characteristics vary with respect to previous evaluation.	One month for the Reserve Connecting DSO analysis is not enough. Reference to the art 3(3) is not relevant here and should be deleted: 1. as written at the moment, it means the DSO has to consult with his regulator…, but article 3(3) is only written for the TSO, not for a DSO. 2. it doesn't make sense to make reference to this article, since the DSO is supposed to give an answer within one month: is this compatible with the process of art. 3(3)? Probably not.
9	52		New paragraph to be added after art 52 (2)	3. Each Reserve Connecting DSO or **'a higher level DSO'** shall have the right to **apply remedial actions or eventually** restrict the delivery of Operational Reserves from a Reserve Providing Unit or Reserve Providing Group to ensure operational security at any point in time before reserve activation. For the case of a restriction in real-time or a forecasted restriction of the delivery from a Reserve Providing Unit or Reserve Providing Group the Reserve Connecting DSO shall make best efforts to inform the relevant Reserve Provider as soon in advance as possible. The relevant Reserve Provider shall inform the Reserve Connecting TSO in reference to Article 29(4), Article 31(3) and Article 34 (4) about an unavailability of Operational Reserves.	Congestions of elements in the distribution network have to be dealt with on a case by case basis. Operational security in the Distribution network cannot be challenged by the activation of reserves. The process of pre-evaluation of reserves implies a capacity reservation in the DSO's grid for reserves. If the DSO doesn't have the right to restrict the capacity in real-time, he will allow only such reserves which can be supplied under worst-case conditions. This will limit reserves in DSO grids much more than necessary under normal conditions. This text can already be found in the supporting paper. This right should be stated in the network code itself rather than in each contract with an reserve-providing unit. This contract will be signed between the reserve provider and the TSO, which means the DSO cannot influence any obligations contained or not contained in such contracts.
9	52	3	Each Reserve Connecting DSO shall have the right to request from a Provider the provision of the information referred to in Article 52(1) during the time the Reserve Providing Unit or Reserve Providing Group is in operation.	Each Reserve Connecting DSO shall have the right to request from a Provider the provision of the information referred to in Article 52(1) and **in addition the activation set-point** during the time the Reserve Providing Unit or Reserve Providing Group is in operation **if necessary to ensure operational security.**	see comments and justification for 52(3).

Union of the Electricity Industry - EURELECTRIC aisbl
Boulevard de l'Impératrice, 66 - bte 2
B - 1000 Brussels • Belgium
Tel: + 32 2 515 10 00 • Fax: + 32 2 515 10 10
VAT: BE 0462 679 112 • www.eurelectric..org