



Comments to ENTSO-E Draft Load Frequency Control & Reserves Network Code

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General comments

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 on 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 droop 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 and 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.

Title	Article	Paragraph	Initial version	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 must 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 every one, 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) 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; 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 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 every one, 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 every one, 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 stablished in OS 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 every one, 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 parragraph 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).