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LFCR code update for JESG, May 2013



JESG – update on developments in 30th April LFCR published version

16th May 2013 - David Bunney

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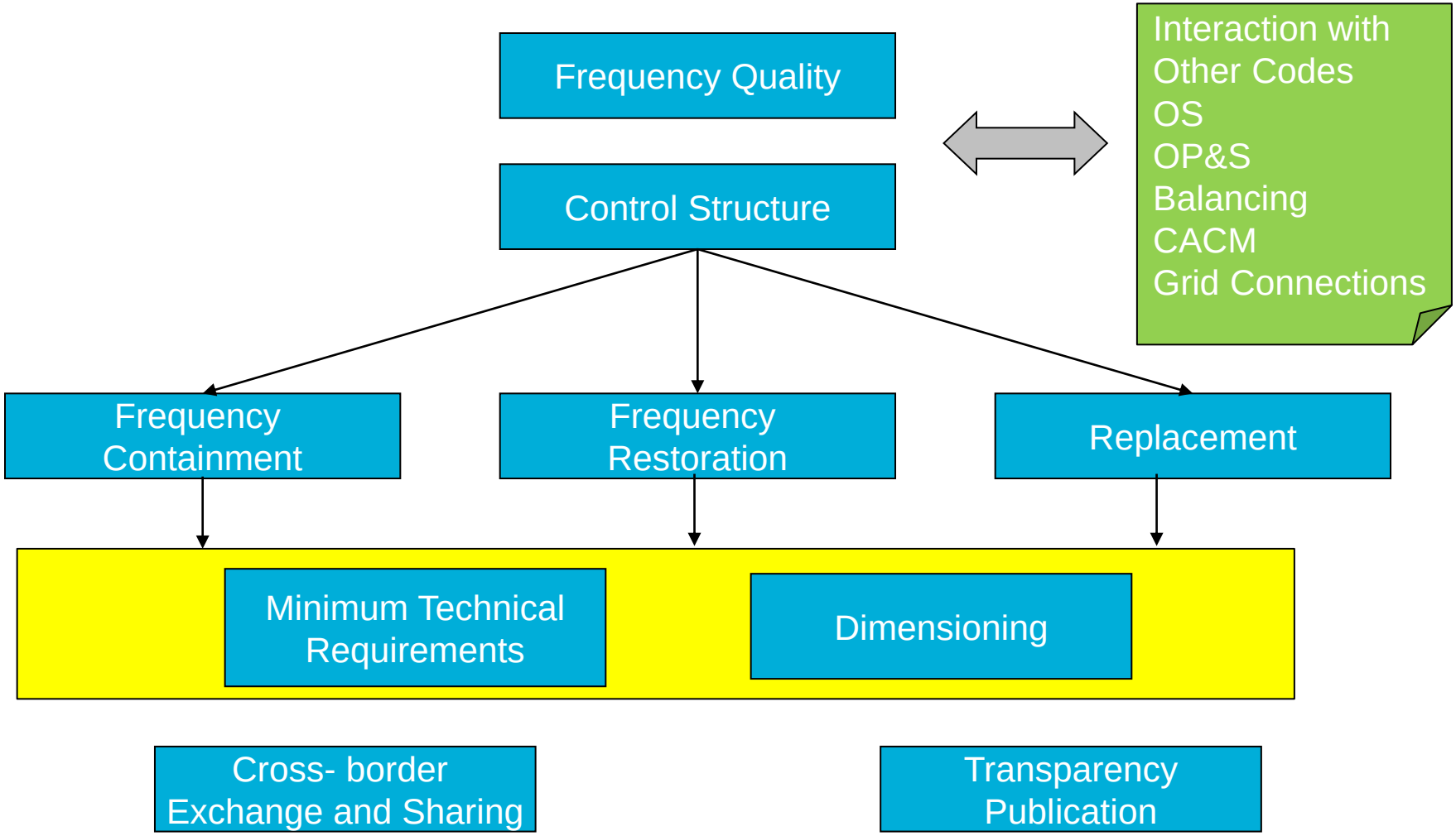
LFC&R Network Code Structure



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LFCR v4 (30th April) – a recap of recent events

- Between February (last public version) and May LFCR drafting team weekly meetings and weekly draft iterations of the code;
  - Stakeholder & ACER comments and internal drafter concerns have been taken seriously;
  - Concerted effort to align the code with existing network codes including references to OS, RfG and DCC; updated definitions and increased clarity on regulatory oversight;
  - Supporting Document updated but more work required;
- Code drafting nearing completion with remaining time dedicated to legal revision and ACER consultation/feedback.

LFCR Code Roadmap and next steps

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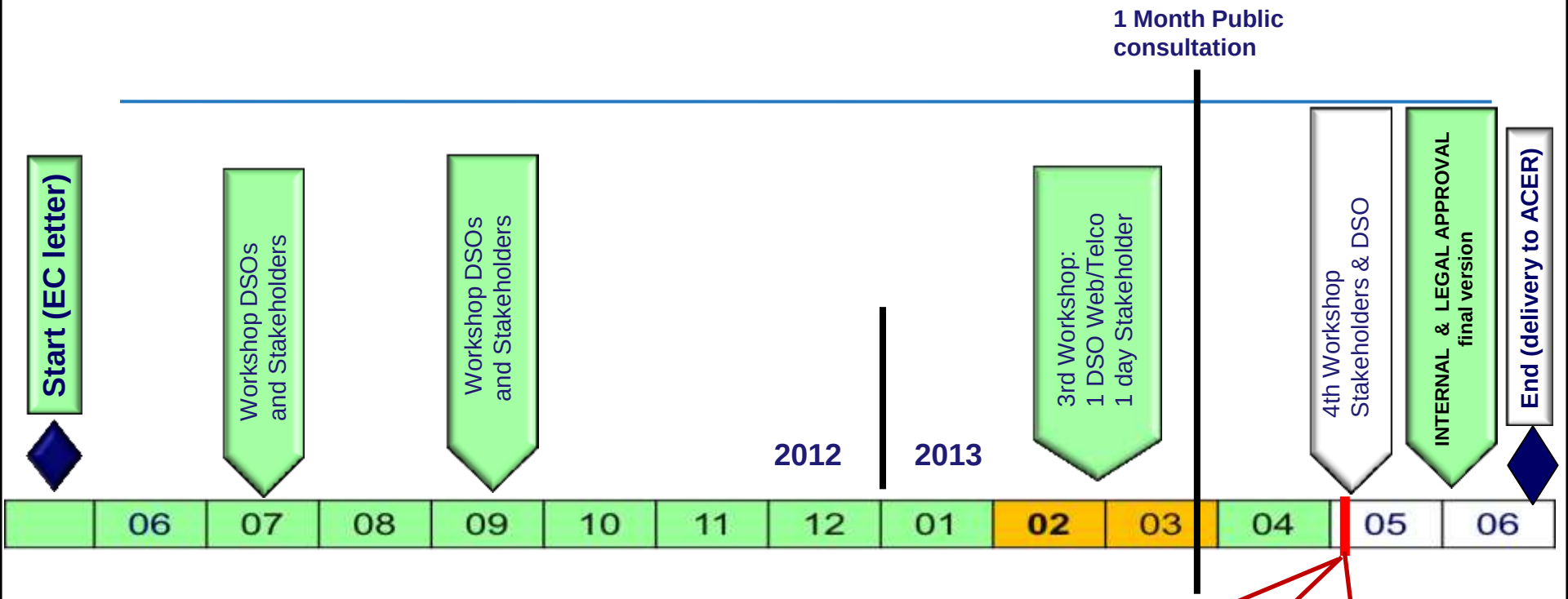

- Code to be sent to ACER in June
- Remaining time dedicated to catering for Legal Drafting and ACER related concerns.

07.05.2013 4th Stakeholder Workshop

08.05.2013 4th DSO TEG Webconference

15.05.2013 ACER & EC meeting

ENTSO-E LFCR Consultation Stakeholder Comments received in April 2013

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LFCR Draft of February 2013 had many stakeholder comments (listed by chapter)

General Comments:	**29**
Definition:	**146**
Legal Framework:	**95**
Frequency Quality:	**192**
Control Structure	**201**
Frequency Containment Reserve (FCR):	**163**
Frequency Restoration Reserve (FRR):	**134**
Replacement Reserve (RR):	**95**
XB Exchange and Sharing:	**20**
Time Control:	**7**
DSO:	**23**
Transparency:	**77**
Total:	*1382*

- February draft code release;
- Consultation 1382 comments;
- Many comments on same theme and grouped in four of five major concerns per chapter;
- New release takes into consideration the comments;

For full details please refer to the ENTSO-E slides from the Public Workshop of 7th May 2013 (provided)

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LFCR: Outstanding issues on the V4 (30th April)

- Newly published version of the code was released on 30th April.
- There are a few remaining GB concerns with the 30th April published version of the code (correction requests submitted by GB):
  - FCR Time to Full Activation = 30s (should be 10s – i.e. publication error);
  - Some difference in method and thus targets between GB/Ireland to CE/NE because of differences in frequency quality management and reserve management between Synchronous Areas which comprise multiple TSOs and multiple LFC-Blocks as opposed to single TSO managing frequency quality;

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Summary of changes to code

- New Regulatory Article 4 separates and specifically defines articles under LFC Area single NRA scrutiny, regional or SA multiple NRA approval processes;
- New Articles for MW profile Information; TSO right to define maximum ramp rate restrictions on interconnectors demand and generation;
- Significant clarification and separation of frequency quality and reserve management approaches in two groups GB & Ireland and CE & NE. GB specific articles retain current approaches and regulation from existing GB grid code;
- System States (Article 34) for ‘Normal’ and ‘Alert’ states now clearer. Includes required coordination and mitigating actions by TSOs and also obligations on connected parties to follow new set-point instructions (Alert State can be for a prevailing frequency related problem or lack of available reserves).

Code structure and map of changes

Chapter 1: General Provisions	Regulation – NRA role Article 4
Chapter 2: Operational Agreements	New definitions / New section
Chapter 3: Frequency Quality	GB targets on time outside Hz bands
Chapter 4: Load-Frequency-Control Structure	GB regulate on Hz not on ACE
Chapter 5: Operation of Load-Frequency Control	Limited changes
Chapter 6: Frequency Containment Reserves	GB / Ireland specific clauses: • Dynamic Dimensioning • Reduced obligations on providers (since active market in GB)
Chapter 7: Frequency Restoration Reserves	
Chapter 8: Replacement Reserves	
Chapter 9: Exchange and Sharing of Reserves	Limited changes to these sections. Sharing and Exchange only TSO-TSO between Synchronous Areas Sharing and Exchange can only happen between direct electrically neighbouring LFC-Blocks and is limited % of overall dimensioning requirement for security reasons;
Chapter 10: Time Control Process	
Chapter 11: Co-operation with DNOs	
Chapter 12: Transparency of Information	
Chapter 13: Final Provisions	Time control now has no target table, no specific obligations in GB

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For JESG members to review offline

Questions may be returned via email to JESG

ADDITIONAL DETAIL ON REVISIONS AND GB SPECIFIC ARTICLES/CLAUSES

Frequency Quality and GB targets

LFCR CHAPTER 3 concepts

- How the Frequency Quality is managed in a Synchronous Area;
- How ACE is managed within and between Blocks;
- **Quality of Supply:** Frequency Range, Maximum Deviation and Target Time Ranges for TSO to regulate to and number of excursions per period.
- **Finance**: Specific operational targets which will form basis of Regulation and Regulatory Allowances;

These elements are then reported in quarterly and annual reports as well as more frequent publications on the ENTSO-E transparency web-platform.

TSO Operating Targets:

- GB & Ireland regulated on ΔF (Hz not MW ACE). *CE & NE regulate on ACE with inter-block cooperation;*
- GB back inside 'Statutory' in 1min and 'Operational' in 10 min as per SQSS. (new names "Frequency Range Within Time to Recover" and "Frequency Range Within Time to Restore" respectively).

Implications and linkages in LFCR code to dimensioning and process activation requirements with two approaches:

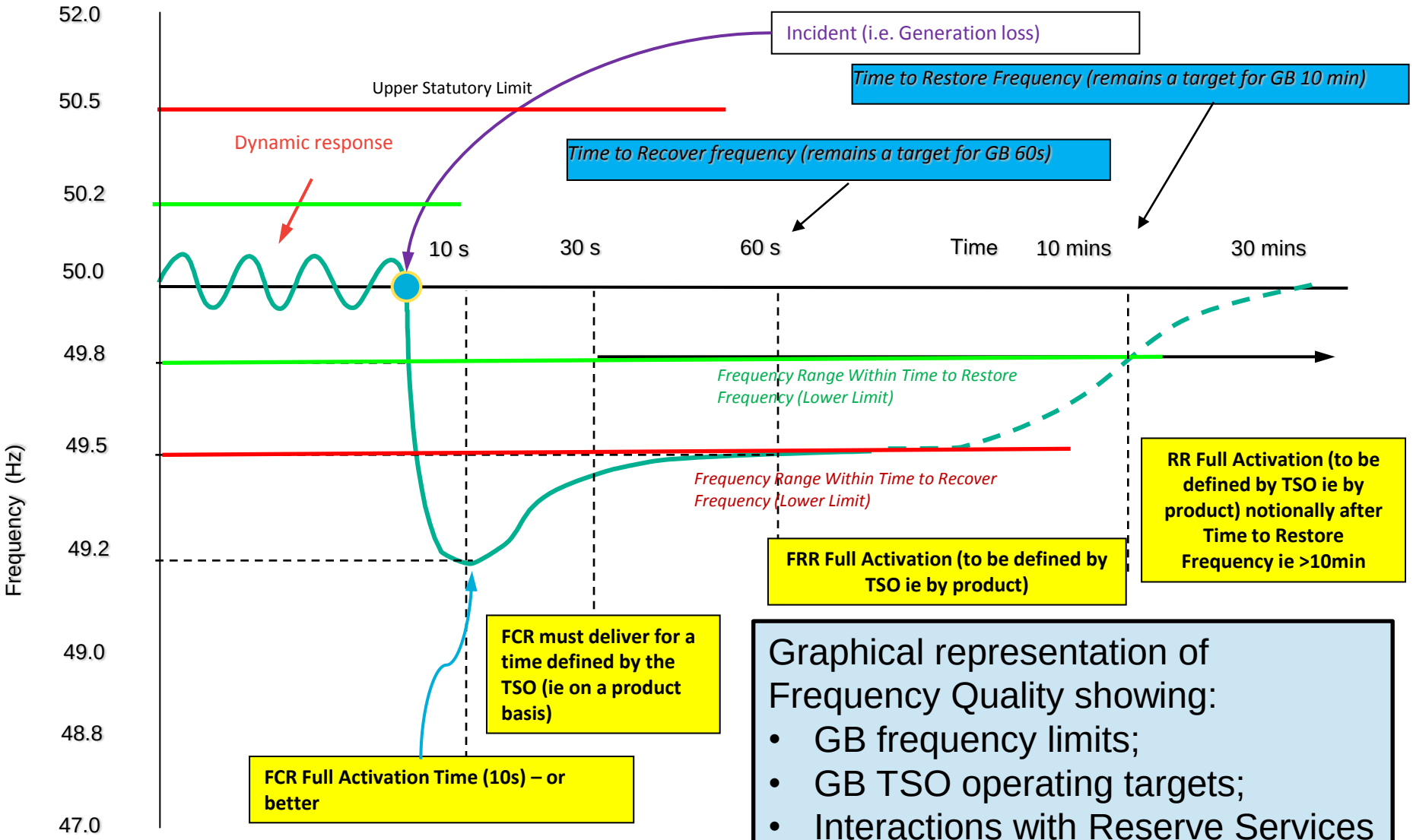
1) Based on ACE for CE + Nordic

2) Based on ΔF for GB + Ireland

TSO Regulating and Reporting:

- GB to be regulated to 15000 cumulative minutes = 3% of year outside of 200mHz and 1% outside of 500mHz. (derivation from GB incentives = 15000 relates to 1500 incidents x 10min each) [Article 11 & 12]
- Additional obligations on GB TSO for the reporting of number of events and standard deviation information [Article 13]

GB: Frequency Quality Target Parameters & relationship with Reserves

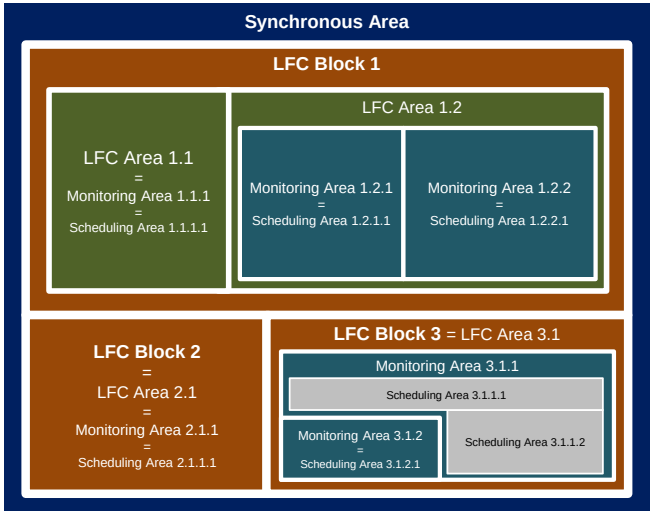


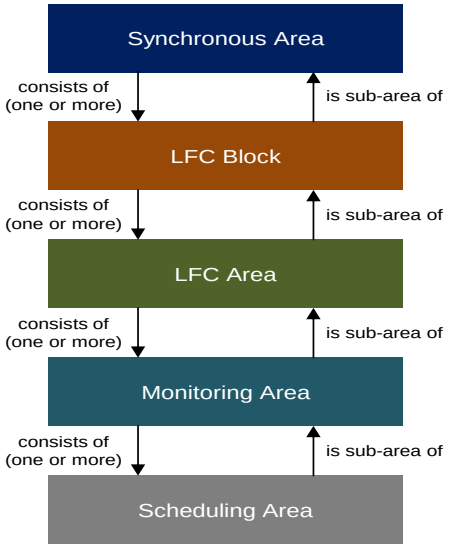
Graphical representation of Frequency Quality showing:

- GB frequency limits;
- GB TSO operating targets;
- Interactions with Reserve Services

Chapter 4: Control Hierarchy

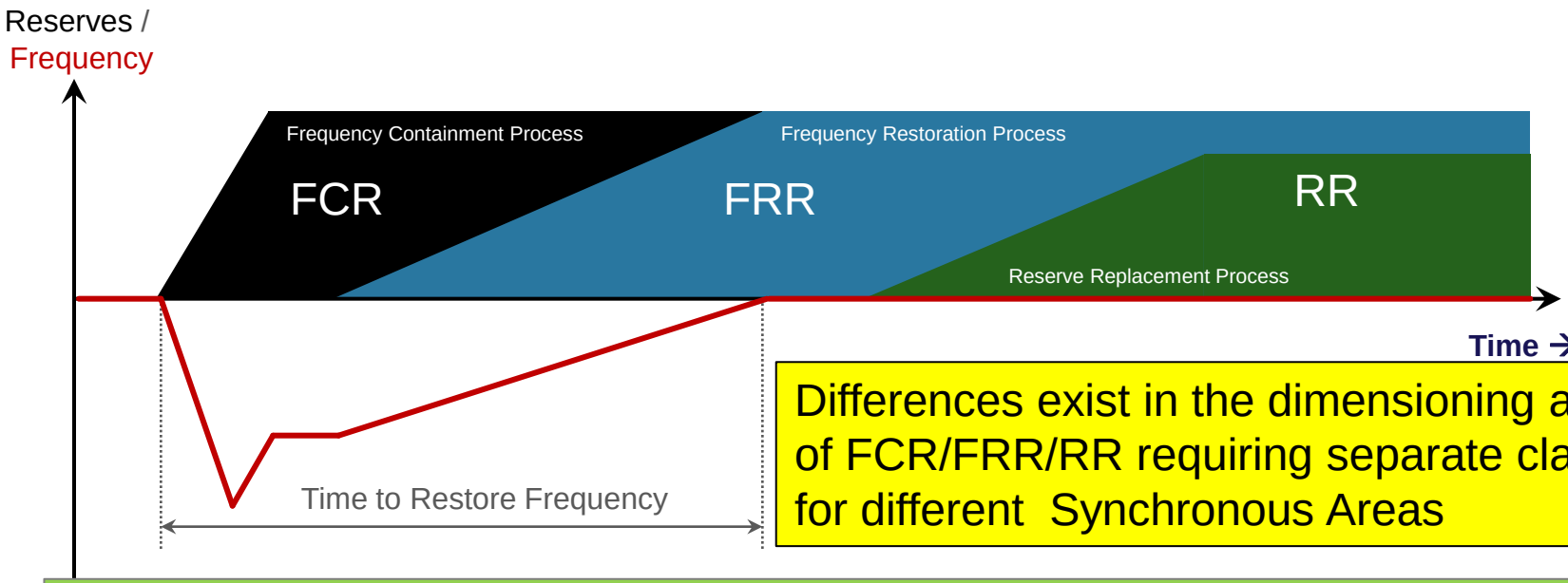
Obligations	Scheduling Area	Monitoring Area	LFC Area	LFC Block	Synchronous Area
Scheduling	MANDATORY	MANDATORY	MANDATORY	MANDATORY	MANDATORY
online calculation and monitoring of actual power interchange	NA	MANDATORY	MANDATORY	MANDATORY	MANDATORY
calculation and monitoring of the Frequency Restoration Error	NA	NA	MANDATORY	MANDATORY	MANDATORY
Frequency Restoration Process	NA	NA	MANDATORY	MANDATORY	MANDATORY
Frequency Restoration Quality Target Parameters			MANDATORY	MANDATORY	MANDATORY
FRR/RR Dimensioning	NA	NA	NA	MANDATORY	MANDATORY
Frequency Containment Process	NA	NA	NA	NA	MANDATORY
Frequency Quality Target and FCR Dimensioning	NA	NA	NA	NA	MANDATORY
Reserve Replacement Process	NA	NA	OPTIONAL	NA	NA
Imbalance Netting Process	NA	NA	OPTIONAL	NA	NA
Cross-Border FRR Activation Process	NA	NA	OPTIONAL	NA	NA
Cross-Border RR Activation Process	NA	NA	OPTIONAL	NA	NA
Time Control Process	NA	NA	NA	NA	OPTIONAL
Mandatory cooperation to fulfil obligations of	Monitoring Area	LFC Area	LFC Block	Synchronous Area	NA





Important: An overview from the code of where in the control hierarchy obligations reside. This is very important in CE. For GB it is National Grid as Electricity TSO which is responsible at all levels.

Chapter 4: Process Activation Structure



Differences exist in the dimensioning and use of FCR/FRR/RR requiring separate clauses for different Synchronous Areas

CE/NE concept: RR replaces FRR replaces FCR
GB/Ireland: RR replace/support FRR and FCR

GB is unusual in taking proactive RR activations to deal with forecast future deviations. RR is used more flexibly in GB to protect and preserve FCR and FRR. In CE dimensioning is FCR:FRR:RR on a 1:1:1 basis and the CE reserve providing units can only be active in one category at a time. This is not true of GB or Ireland.

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GB Reserve dimensioning now clarified

- Dimensioning :

1. Within GB: Continuous redimensioning and risk assessment as described in the LFCR Supporting Document to maximise use of assets and continuously optimise cost/benefit of security/reserve cost;
2. Within GB reserve is managed fluidly and various options including pro-active early RR activation for predicted imbalances may occur which allows flexibility in proportional distribution of holdings (differs markedly from CE & NE approach with a 1:1:1 relationship to Dimensioning Incident);
3. GB has less prescriptive and codified restrictions on the sharing and exchange of reserves with other areas than do other synchronous areas (mainly because of point 1);

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GB connected parties view – part 1

- Obligations on all Connected Parties

  Connected parties have some obligations to assist the TSO in preserving frequency quality (whether DNO or TO connected);

  - Obligations to provide forecast/contracted MW output profiles (as per 'PN's in GB); [new article 17]
  - Maximum Ramp Rate Restrictions apply to all connected parties and for interconnectors potential obligation for groups of interconnectors to ensure their combined ramp-rates do not exceed a group limit [new articles 18 – 20]
  - Where there is a threat to the system ('alert state') and insufficient conventional tools to deal with the issue then, the current concept of TSO having obligation to coordinate and the ultimate right to instruct a new set-point or disconnection of generation/load/interconnectors (as per GB 'emergency instruction') to preserve system frequency quality and integrity [various articles e.g. articles 34(10), 34(11) and 34(12)].

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GB connected parties view – part 2

- Reserve Providers perspective
  - *Note for each reserve service FCR/FRR/RR: Minimum Technical Requirements relate to the category qualification aspects. Other specific product criteria (out of scope for LFCR code) will apply;*
  - Code applies a 1MW level of significance in most cases;
  - GB categories align coarsely with current SQSS criteria and objectives for Containment, Restoration and Replacement;
  - Reserve providers must provide disaggregated information on general commercial output, service status and MW being delivered against a specific service;
  - FCR Technical Minimum Requirements – maximum insensitivity of the governor now increased from 1mHz to 10mHz.

Netting, Exchange and Sharing General Concepts

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The latest version of the code aims to be clearer about processes, obligations etc.

- For each reserve service, each LFC Block will determine its total requirement according to Dimensioning Rules;
- Netting arrangements – allow for any requirements for positive and negative reserve activations to be 'netted' where transmission capacity/security permits;
- Exchange – Where the Connecting TSO has more available reserve capacity than it's dimensioning requirements this may be provided exclusively to a neighbouring Reserve Receiving TSO via Exchange mechanisms;
- Sharing – Where two neighbouring TSOs have an agreement in place they may pool a portion of their combined reserve holding.
- Explicit rules within the code limit these cross border mechanisms to ensure security of supply is not unduly affected;
- Neighbouring LFC-Blocks within the same Synchronous Area may permit TSO-BSP cross-border activation agreements (subject to rules in the Balancing Network Code as well as being subject to multiparty agreements being established);
- Interconnector owners/operators must cooperate to permit these services where the HVDC installation permits it.
- FCR sharing is only permitted between the Synchronous Areas of GB and Ireland;

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Exchange of reserves: Security Restrictions

Reserve	Within SA	Between SA
FCR	Between adjacent LFC Blocks: • 30% of the Initial FCR obligation to be kept within the LFC Block • Maximum 30% of the Initial FCR Obligation can be fulfilled for other LFC Blocks(with a minimum of 100 MW) Within an LFC Block: • TSOs of the LFC Block shall set limits for the exchange of FCR within the LFC Block based on technical constraints (congestion, network splitting,…)	Exchange of FCR is allowed. • Rules for exchange within the SA have to be respected. • Each SA to set limits to the total amount of FCR to be kept within the SA.
FRR	• An LFC Block should keep at least 50% of its FRR physically located within the LFC Block. • The TSOs of one LFC Block shall set limits for the exchange of FRR within the LFC Block based on technical constraints (network splitting, congestions,…)	
RR	• Identical rules as for FRR	

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For JESG members to review offline

ENTSO-E SLIDES PRESENTED ON 7TH MAY BRUSSELS WORKSHOP

Load-Frequency Control & Reserve

Network Code

Stakeholders WS

after Public Consultation

7. May 2013

entsoe

Reliable Sustainable Connected

Overview Stakeholder Consultation Results

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Basic Changes

- General Provisions – updated according to the OS / OPS NC
- SAA / LFC Block Agreement Summarised in a new Chapter “Operational Agreements”
- New Chapter “Operation of Load-Frequency Control”, based on the former Article 32 “FRR Operation” setting a clear link to the System States defined in the OS NC
- Introduction of an Annual Report
- Definitions updated and consistent with other NC
- Consitency & Reference to RfG / DCC / OS / OPS NC
- Chapter on Reserve Providers to be included in the Supporting Document

Regulatory Aspects

- A new article has been added in the first section of the Network Code (Article 4). This directly refers to the powers of regulators as mentioned in the Third Energy Package and specifically in Directive 2009/72/EC. It presents a consistent set of timings and clarifies the role of regulatory authorities. To enhance clarity, ENTSO-E has explicitly listed all cases where Regulatory Approvals are foreseen and at which level the respective approval should take place (e.g. pan-European, Synchronous Area level or national regulatory authorities).
- Transparency market issue are dealt with in the European transparency guidelines. Not all information should be available close to real time. Even so, Article 3(1) imposes that all requirements under this Network Code are also to be established under the principle of transparency. Therefore, this principle - substantiated in the transparency guidelines - is fully respected.
- The principle of optimisation has also to be respected for Load Frequency Control and the provisions of Reserves. Optimisation means here in particular efficiency of the processes and reasonable numbers of needed reserves to hinder to high costs of reserves to be provided.

Frequency Quality Defining / Target Parameters

- The Frequency Quality Target Parameters are already defined in the NC so there should be not amended by TSOs themselves without a consultation and an approval process.
- A regulatory oversight should be introduced in Article 9(2). Those TSO decisions require NRA / ACER approval and stakeholder involvement.
- Subparagraph to be added to Article 9(4): "e) Targets shall be technically feasible and agreed in consultation with Stakeholder if other NC for example RfG NC are affected."

⇒ Rewording of whole Article; Parameters defined in the NC are "default values"; different values can only be agreed with NRA Involvement and an analysis of the impact on Stakeholders.

- Fill in values of Maximum number of minutes outside the Standard Frequency Range.

⇒ Values for the Frequency Quality Target Parameters have been filled in except NE

Frequency Restoration Control Error Targt

- Definitions of "Frequency Restoration Control Error Defining Parameters" needs to be provided in order to assess whether CBAs and/or NRA implication is required in the revision process.

⇒ The definition of Frequency Restoration Control Error Defining Parameter has been included.

- Define parameters regarding the Time To Recover Frequency

⇒ Introduction of a new Frequency Quality Evaluation Criteria to take into account the Time to Recover Frequency.

⇒ Additionally: Introduce a new Article GB / IRE for the Frequency Restoration Control Error Target Parameters for GB and IRE

Criteria Application Process

- Introduce a new Frequency Quality Evaluation Criteria: The frequency control response should be maintain within a "trumpet curve" pathway;

⇒ The “trumpet curve” is included

- The methodology to assess the risk and the evolution of the risk of FCR exhaustion in the Synchronous Area shall be publicly available.

⇒ Introduction of publication of this methodology in Chapter 10.

- Submission to NRA approval the methodology to assess the risk and the evolution of the risk of FCR exhaustion in the Synchronous Area.

⇒ Introduction of NRA involvement in old Article 12(3), new Article 14(3).

Mitigation

- The current language is too broad and opens the door for the TSOs to obtain wide rights of review of the behaviour of market participants.
- It is not acceptable to have a reference to ancillary services markets which is not defined neither described in this code. It should be left for the network code on electricity balancing. It is also not acceptable to refer to rules for the behaviour market participants.
- 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.
- Submission to NRA approval of all possible Mitigation Procedures.
- …

⇒ Article has been completely revised taking many of the comments into account.
⇒ In addition a couple of Articles have been included giving the TSOs the right to introduce ramping constraints subject to NRA involvement

LFC Structure (1)

- Recurring topic: Optional control processes (e.g. Imbalance Netting Process) should be made mandatory instead of “optional”

⇒ While some of the optional control processes might be mandatory due to other NCs (EB NC) or regulations, LFC&R NC deals only with technical requirements. From technical perspective, the implementation of the control processes in question is not a precondition for the maintenance of operational security in each case. In case of exchange and/or sharing of reserves or joint dimensioning for several LFC Areas the implementation of the respective cross-border activation processes is required explicitly.

- optimization of LFC Areas and LFC Blocks

⇒ The optimization of the Process Responsibility Structure is out of scope of this NC.

⇒ In any case the Process Responsibility Structure shall be defined according to national law including NRA approval

⇒ The “maximum size of the LFC Block” is deleted.

LFC Structure (2)

- Approval of the “set-point value” by NRAs / clarification of set-point value

⇒ The term “set-point” is a well-known technical term and describes a desired value for a controlled physical variable, e.g. the desired value for FRR / RR activation. Obviously, in order to operate the system the TSOs need to calculate this set-point value by a controller (aFRR) or define it manually (mFRR / RR) in real-time. In the second step, the set-point is “communicated” to the FRR Providing Unit or Group which physically activates FRR / RR. The corresponding control diagram is shown in the supporting document

- clarification of transmission capacity for X-B processes

⇒ the term “available transmission capacity” was replaced by the reference to Operational Security Limits

FCR Dimensioning

- FCR Dimensioning: NRA involvement requested

⇒ NRA involvement is generally considered for a number of requirements – however, this is not the case concerning FCR dimensioning, since the process is already defined in the code and doesn't need further approval

FCR Minimum Requirements (1)

- Additional Properties: delete possibility for TSOs to define – all requirements in the NC; harmonisation necessary; need for approval, coordination with RFG

⇒ Additional requirements: transition period upon consultation with affected FCR Providers and NRA approval added.

- Additional requirements for Reserve Providing Groups: to be in line with RFG, approval by NRA, to be harmonized, management of Reserve Providing Groups up to the FCR Provider, delete right to exclude

⇒ right to exclude deleted, approval included

- Monitoring: delete time-stamped instantaneous power without FCR activation, already in the scope of RFG; include a power threshold for data, time resolution too strict, delete request for droop, delete possibility to request online data

⇒ Data list adapted by replacing b), c) and d) with “time-stamped active power data needed to verify FCR activation. This data shall include, but is not limited to time-stamped instantaneous power”

⇒ possibility to aggregate small units up to a common power of 1 MW provided that clear verification of FCFR activation is possible added

FCR Minimum Requirements (2)

- Prequalification: time period for evaluation requested, process to be harmonized, process in the Code

⇒ General process description included

⇒ new formulation to cover request for defined evaluation time:"… within 3 months after provision of all the required information by the FCR Provider to the Reserve Connecting TSO…."

⇒ new formulation, put in a general section of the NC, since it should be valid not only for FCR ("In case compliance with certain requirements of this code have already been verified against the Reserve Connecting TSO it will be recognized in the prequalification");

- Accuracy of frequency measurements/ insensitivity - too strict

⇒ accuracy requirement changed to 10 mHz (additional requirement to apply current industrial standards in case they are better than 10 mHz)

- Distinguish between "inherent insensitivity" and "intentional dead-band"

⇒ distinction/clarification made in table 3

FCR Provision (1)

- Availability/unavailability:, adapt formulation concerning information to the TSO, for replacement of an outage 12 hours are too long, replacement of an outage should be responsibility of the TSO, replacement of an outage should be according to the contract; exception for planned outages as well;

⇒ Requirement connected to obligation to provide FCR

⇒ Information requirement limited to FCR Providing Unit/Group “that is considered to be relevant according to the results of Prequalification without undue delay”;

⇒ According to continuous availability “during the time period in which it [the FCR Providing Unit] is obliged to provide FCR” was added

⇒ Responsibility for replacement of unavailable FCR --> New formulation in 5: “ Each TSO shall ensure or shall require from its FCR Providers to ensure….”

⇒ Requirement for replacement in case of a forced unavailability harmonized; requirement for replacement as soon as technically possible and according to the conditions that shall be defined by the Reserve Connecting TSO.

FCR Provision (2)

- Limits for concentration of FCR (3%/6%): criteria missing, numbers too low, delete limits at all

⇒ limit per unit raised to 5

⇒ limit for the electrical node deleted

- Limited storage: delete recovery of exhausted storage, 30 minutes too long / not in accordance with RFG; GB and IRE – shall be approved by NRA

⇒ GR and IRE: approval of methods added

⇒ 2 hours (for all other SAs): "…as soon as possible but at least…." added

- Counter measures for persisting frequency deviations: measures to be described in the NC

⇒ Counter measures added and put in the Operation chapter

FRR Dimensioning (1)

- It was requested to make the dimensioning approach and the results subject to NRA approval. In addition it was requested, that the methodology to arrive to the ratio of automatic and manual FRR shall be justified to and approved by the NRA.

⇒ It shall be made clear in the Supporting Document that the dimensioning methodology is already subject to NRA approval and that the determination of automatic and manual FRR is hence part this methodology. The results shall not be subject to approved by the NRA as the methodology has been approved.

- Several comments referred to the changing electricity and market systems and argued that a dimensioning based on historical data is not sufficient.

⇒ It shall be explained in the Supporting Paper that the term “significant expected changes” refers to the possibility to incorporate the expected changes.

FRR Dimensioning (2)

- Several remarks challenged the 99% quantile approach and requested a more strict percentage (e.g. 99,9%)

⇒ It shall be explained in the Supporting Paper, that the 99% is a minimum value and that the goal of the dimensioning is to achieve the FR quality target.

- One remark was given, that sharing shall not be allowed, because it defeats the object of separation of LFC Blocks. Others requested an explanation of the 30% rule.

⇒ It shall be explained in the Supporting Paper, that the Sharing is strictly limits the sharing of FRR and hence guarantees an independent operation. Also the 30% rule shall be reasoned.

FRR Minimum Requirements

- It was requested to make any complementary requirement subject to NRA approval and to promote European harmonization; furthermore it was remarked that these requirements shall be consistent to the NC RFG

⇒ Ranges shall be introduced for all the parameters that may be chosen by the TSOs, references to RFG requirements shall be introduced, but as RFG is only valid for new units this shall be of lower importance.

- The specifications regarding real-time measurement supply and the reference power production are unclear.

⇒ It was specified, that the measurement is primarily relevant from the Connection Point perspective, but that further information for a Group can be necessary.

- It was requested to supply on-line measurement data to the Reserves Connecting DSO.

⇒ The obligation was enlarged to Reserve Connecting DSO.

FRR Operation

- Several requests were made to fact that the relation to the OS NC and to other NC shall be clarified.

⇒ The relation was clarified, that only the Normal State and the Alert State with regard to System Frequency are covered by this code.

- Many remarks were given, that the instruction of generating and demand facilities shall only be applied if NRA approval is given and if cost compensation is guaranteed for these cases. Further ones questioned the LFC&R Code the right place to regulate this, but would expect a reference to the Emergency Code

⇒ The NRA Approval for the actions was introduced; a reference to the Emergency Code was omitted.

Exchange of FCR (1)

- The right for BSPs to participate in each TSO tender for FCR

⇒ The NC is rewritten in a way that it only covers technical limits for the exchange of FCR. The market organization of the exchange itself shall be described in the NC on Electricity Balancing.

- Limits for the exchange of FCR: Clearer formulation; No export limit for FCR to ensure liquid market;No internal limits for exchange of FCR within an LFC Block; NRA involvement for limits;

⇒ The formulation of the limits was made more clear. NRA involvement was added where the exact limits are not set in the NC. The limits proposed in the NC LFC&R (both for import and export) are maintained as they ensure an even distribution of FCR throughout the Synchronous Area, and are therefore important to ensure Operational Security, as well as an even distribution of FCR in case of network splitting.

Exchange of FCR (2)

- Agreement between Connecting, Receiving and Affected TSOs on the Exchange of FCR subject to NRA approval

⇒ This article was reformulated and states now that the Exchange of FCR can only be refused in case the exchange of FCR could lead to flows exceeding the Operational Security Limits.

- Definition of and approval for the common threshold to apply as Affected TSO

⇒ The common threshold was deleted from the NC. It is stated now that a TSO can declare itself as Affected TSO in case the Exchange of FCR affects its Operational Security parameters.

- Reliability margin: No reservation of XB capacity to allow for the exchange of FCR; Add reference to NC CACM for the Reliability Margin;

⇒ A more thorough link with NC CACM was put in place. The NC LFC&R only deals with technical issues and not with costs (cost benefit analysis).

General Requirements Exchange of FRR / RR

- ‘The Reserve Connecting TSO shall give its prior consent in case of a direct relationship between the Reserve Receiving TSO and the Reserve Providing Unit or Group.’ A TSO should not be able to block a TSO – BSP model. A mitigation procedure for lack of reserves should be sufficient.

⇒ The article was rewritten to focus only on the technical relationships and requirements for the good functioning of the Exchange of FRR/RR. A mitigation procedure for the case that the Exchange of FRR/RR leads to insufficient volumes was added.

- Cross-border capacity for the exchange of FRR/RR: Delete the article that sufficient cross-border capacity must be available (role of NC EB): No ex-ante reservation of capacity for the Exchange of FRR/RR.

⇒ Wording was changed to focus only on technical issues.

- Make role of Reserve Connecting TSO more clear.

⇒ Role is made more clear throughout the NC by defining the different topics to be considered when defining roles and responsibility of Connecting and Receiving TSO.

General Requirements Sharing of FRR / RR

- Total combined limit for the sharing and exchange of FRR/RR Capacity;

⇒ The limits for the exchange were adjusted in order to reflect the fact that the 50% limit for FRR/RR relates to the total amount of FRR/RR before any reduction due to sharing.

- The consent of any Affected TSO cannot unreasonably be withheld.

⇒ It is now stated that an Affected TSO can refuse the sharing in case the flows exceed the Operational Security Limits.

Exchange of FRR / RR

- The right for BSPs to participate in the tender of FRR / RR for the exchange of FRR / RR

⇒ The NC is rewritten in a way that it only covers technical limits for the exchange of FRR / RR. The market organisation of the exchange itself shall be described in the NC on Electricity Balancing.

- The Exchange of FRR / RR should be subject to NRA involvement to avoid one TSO to pass costs to another TSO

⇒ As the technical limits for the exchange of FRR / RR are clearly put forward in the NC or require NRA involvement in case of ad-hoc limits, no further NRA involvement for technical matters is required. Market arrangements and costs will be treated in the NC on EB and are not considered in the NC LFC&R.

- Explanation on supplementary FRR Capacity (1 comment)

⇒ Supplementary FRR Capacity was removed from this NC.

Exchange and Sharing between S.A.

- Excluding the possibility for a TSO-BSP model would be in contradiction with the internal market rules

⇒ BSP to TSO model facilitated.

- Only free and secured (n-1) transmission capacity can be used for these operational security relevant products (1).

⇒ The network code draft was neutral in terms of how the capacity was made available.

- Stakeholder should be informed of contracted reserves and prices
- The TSOs must comply with both the REMIT and Transparency Guideline obligations

⇒ Contracted reserves are a transparency issue. The NC LFC&R does not describe how the contracting is done, This is covered in the NC Balancing.

XB Activation of FRR / RR (1)

- Make cross-border activation an obligatory process for TSOs as TSOs are required to share/exchange reserves

⇒ Cross-border activation shall be allowed by the NC LFC&R as long as it doesn't interfere with operational security.

- Inappropriate reference to optimization purposes

⇒ Reference to optimization purposes was deleted. The NC LFC&R now only states that the cross-border activation of FRR/RR is allowed subject to some constraints in the XB FRR/RR activation processes in the control structure chapter.

XB Activation of FRR / RR (2)

- A link should be made towards the limits on the sharing and exchange of FRR/RR Capacity; limits for exchange/sharing should be duly justified; exchange and sharing will be transparent;

⇒ The limits for the sharing and exchange of FRR/RR ensure sufficient reserve capacity to be available in the system with an appropriate distribution. The activation of these available reserves however can be optimized in a more global way. There is no direct link between the sharing and exchange of reserves and the limits for the cross-border activation process as such. However sharing and exchange of reserves requires a cross-border activation process to be implemented.

- Overlap with Article 23 and 24

⇒ Article 50 was merged with article 23 and 24; the article was made more clear.

Time Control Process

- Eliminate the chapter or the table with the overview on the ranges which need frequency set point corrections;

⇒ The chapter was rewritten and the table was removed;

⇒ Time Control Process is mandatory for Continental Europe

Co-operation with DNO

- Affected DNOs (DNOs positioned between the Reserve Connecting DNO and the TSO)

⇒ Affected DNO will be included.

- Possibiliies of Limiting reserve provision after prequalification

⇒ Request is reasonable, due to changing conditions of the grid, that the Reserve Connected DNO can review the responsibilities of a provider; temporary limits may be set in accordance with national legislation,

- obtaining more time for the Connection DNO to deliver information.

⇒ Potential Providers are asked to comply with a waiting period of three months. In this waiting period the DNO has two months to perform their analyses. The request for more time for the DNO cannot be granted because TSOs need the final month for their own analyses.

- DNOs requested real time information on Reserve Providing Groups

⇒ The new formulation that the TSO shall agree with its Reserve connected DNO on information exchange, enables flexibility that allow for respecting national practices

Transparency of Information

- rights and responsibilities of TSOs, asking to warrant the correctness of information and to be more specific on the conditions under which TSOs can deviate from publication timeframes.

⇒ The paragraphs in Article 51 dealing with correctness and information and deviations from publication timelines have been adapted to be more specific

- Establish the location for publication

⇒ The location of publication, now the central information transparency platform of ENTSO-E established in accordance with the Transparency regulation, has been centralised within Article 51.

- timing of publications, requesting to publish material further in advance in order to give stakeholders more time to adapt.

⇒ The deadlines for publication of the Process Responsibility Structure and the Process Activation Structure have been changed to 3 months in advance.

Entry into Force

- Request to extend the delay within which the NC requirements should be implemented and Synchronous Area Agreements concluded from 12 months to 24 months.
- Absence of retroactive application should be clearly specified. Requirement to apply to new units only should be explicitly mentioned.
- suggestion to specify the provisions regarding the conclusion of synchronous area agreements and TSO multiparty agreements.

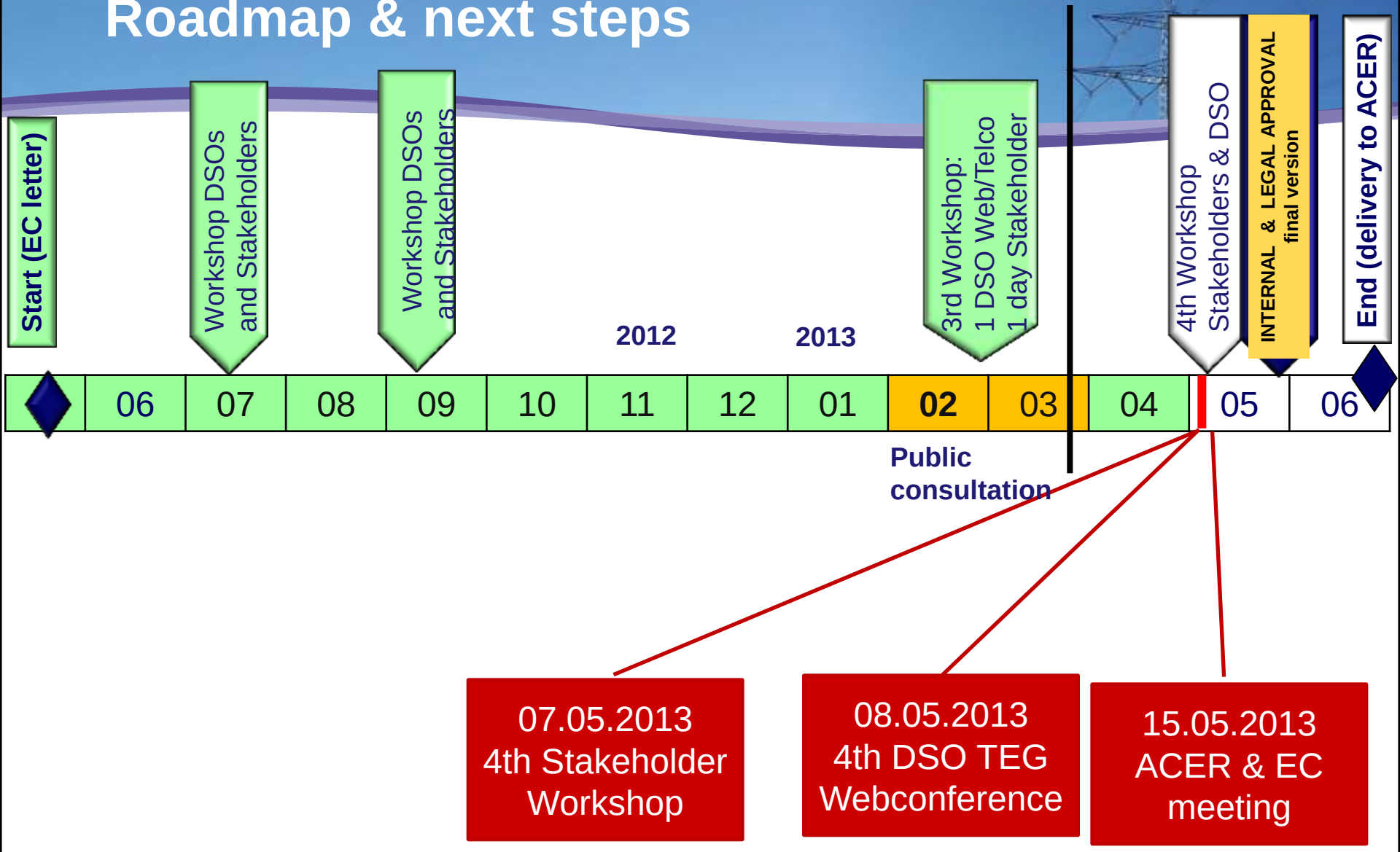
⇒ References to Articles on synchronous area, LFC block agreements added in the provision (see attached suggestion).

⇒ Delete second, third and fourth paragraphs: add instead: “With the exception of Chapter 2 and Article 70, which shall apply as from the entry into force, this Network Code shall apply as from [date – the same as in Article 35 NC OS – at minimum 18 months after entry into force].

⇒ Add at the end: “This Network Code shall be binding in its entirety and directly applicable in all Member States.”

⇒ As is the case in NC OS and NC OPS, the NC LFC&R should provide that it shall apply minimum 18 months after entry into force.

Roadmap & next steps



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Next Steps

7 May – Stakeholder Workshop

8 May – DSO TEG Tele/Web Conference

15 May – Acer & EC Meeting

End of May/June – Internal ENTSO-E Legal Review

Mid June – Internal ENTSO-E Approval Process

28 June – Code Submitted to Acer