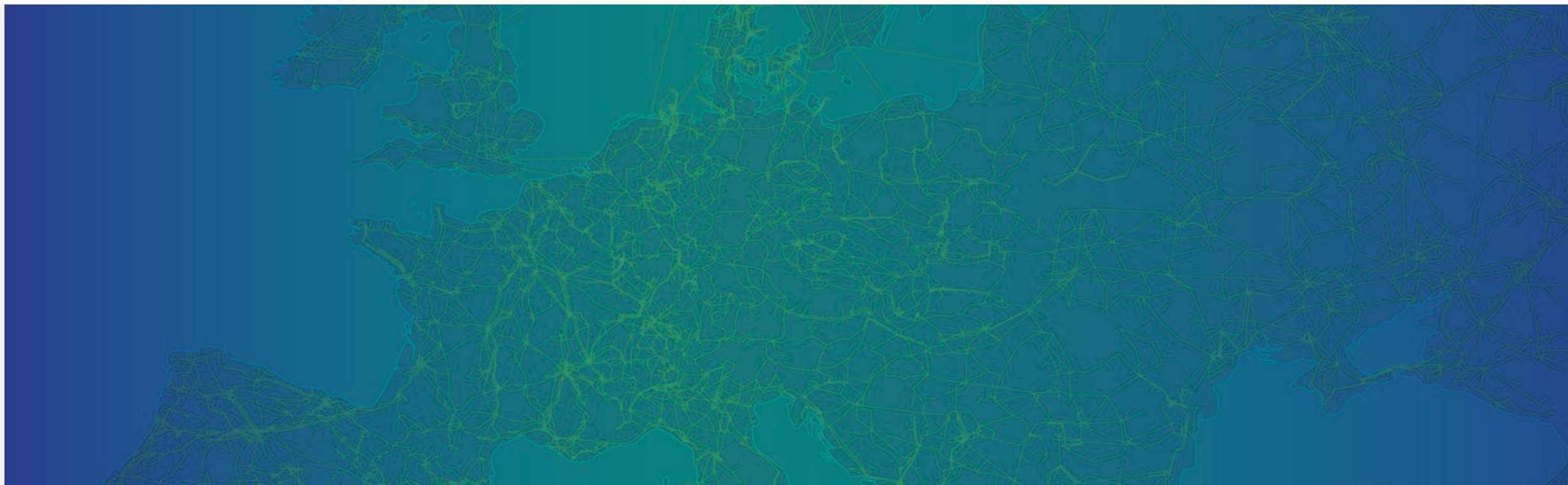


System Operation Stakeholders Committee

Materials for meeting 09 December 2020



1.1 Review of the Agenda

Time	Agenda Topics	Documents	Lead
14:00-14:25	1. Opening 1.1 Review of the agenda 1.2 Review and approval of minutes from previous meeting 1.3 Review of actions	Agenda Minutes Slides	Uros Gabrijel Ana Cigaran
14:25-14:45	2. Update on the implementation actions at pan-EU level	Slides	Ana Cigaran
14:45-15:00	3. System Operation Guideline 3.1 Cost Benefit Analysis for FCR providers by Limited Energy Reservoirs: Status update	Slides	Luca Ortolano
15:00-15:20	3.2 Information on Exchange\Sharing of reserves		Jonas Peter Hasselbom Jacobsen, Mohamed El Jafoufi
15:20-15:40	4. CGM Program Implementation Update		Derek Lawler
15:40-16:10	5. Deterministic Frequency Deviations 5.1 Case studies on frequency changes in Germany 5.2 Update on DFD report	Slides	Gunnar Kaestle Bernard Malfliet
16:10-16:15	6. AOB - Meetings 2021		Uros Gabrijel



1.3 Review of actions

Ana Cigaran

1.3 Review of actions (I)

ACTION	ANSWER	STATUS
1. Note for future SO GL active library to include pre-qualification process aFRR, mFRR, RR.	Preparation for SO GL Active Library is in good progress both for the Digital and content part. More information will be provided in coming SO ESC.	Open
4. National implementation of KORRR	Separate SH Workshop on 11 December	Open
5. ENTSO-E to provide an update about TCM status according to NCER Article	Update will be given in SO ESC in March 2021 together with the Report on rules for suspension and restoration of market activities.	Open
6. ENTSO-E to propose dates for 2021 meetings before the next meeting.	Included in AoB	closed
7. ENTSO-E to send the invitation to the KORRR online workshop (Q4 2020 tentative date)	SH workshop set up for 11 December	closed



2. Update on the Implementation Actions

Ana Cigaran

Pan-European or regional deliverables 2020: SOGL

CSAm
Amendments
(Article 21 & 27)

Final submission to ACER by 18 December 2020

Regional Proposals
for CSA (Art 76-77)

In Q2 2020, NRAs provided their feedback on the submitted methodologies. The final versions of the methodologies are being dealt with by TSOs/NRAs/ACER.

Black - update compared to last meeting
Grey - no update compared to last meeting

Pan-European deliverables 2020: CEP

RCC Establishment proposals (Art 35 ER)

The approval of the RCC establishment proposals by regulators of each SOR is expected early 2021.

Risk Preparedness

Risk Preparedness Regional Electricity Scenario Methodology approved by ACER on 6th March triggering a 6-month period to implement the methodology. A final report ranking the regional electricity crisis scenarios was established by 7th September 2020.

The Electricity Coordination Group (ECG) is eligible to make amendments recommendation to the Report on which the Group is currently working on. The ECG is expected to provide ENTSO-E with recommendations end of 2020/January 2021.

National Implementation

KORRR

Workshop scheduled for 11 December 2020:

<https://www.entsoe.eu/news/2020/11/11/stakeholder-workshop-on-the-national-implementation-of-korrr/>

Operational Agreements

All the Synchronous Area Operational Agreements are available on Transparency platform.

Additionally ENTSO-E has taken actions to facilitate the (optional) publication of LFC data in the Transparency Platform the LFC Block Operational Agreements from Austria, Belgium, Germany, Spain, France, Hungary, **Italy**, Great Britain, Slovenia/Croatia/Bosnia i Herzegovina, Slovak Republic, Ireland/Northern Ireland and Nordic are available on the Platform.

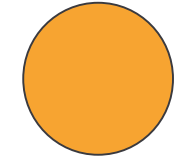


3. System Operation Guideline

3.1 Cost Benefit Analysis for FCR providers by Limited Energy Reservoirs: Status update

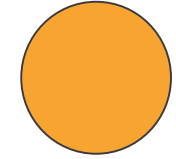
Luca Ortolano

3.1. Status update on SO GL Article 156(11)



- For the **Nordic** synchronous area, on 10th of June the involved TSOs unanimously **approved 15'**.
- For **CE**, from June to September, the Project team of the CBA for FCR by LER and the AS WG have performed **further analysis** starting from the CBA results shared with SH on 27th February. These analysis have been aimed at:
 - understanding the feasibility of a **possible market approach** which could integrate the LER in the FCR provision ensuring both the system safety and a level playing field for all FCR providers;
 - performing **sensitivity analysis on the CBA results** of a FRR FAT equal to 5 min;
- The deadline for the submission of a TminLER by the CE TSOs was previously set for the 24th September (1 year after the NRA approval of CBA methodology).
- It resulted that during the NRAs' approval process one NRA failed to formally approve the methodology. The abovementioned NRA completed the tasks needed for a formal approval of the methodology on 7th of October. **TSOs are then requested to submit CBA results by 7th October 2021.**

3.1 Status update on SO GL Article 156(11)



- Working Teams and WG AS are then planning to **continue the studies under RG CE** with the purpose to **exploit the available time to further investigate the topic** in order to:
 - reach the widest possible consensus amongst TSOs;
 - further consider the feedback received from the SH during the consultation.
- **A document with replies to SH comments** has been published by ENTSO-E



3. System Operation Guideline

3.2 Information on Sharing/Exchange of reserves

Jonas Peter Hasselbom Jacobsen

Mohamed El Jafoufi

Agenda

1. Introduction
2. Action tracker (recap)
3. Extended survey
4. Updated results of the survey
5. Survey conclusions

1. Introduction

Jonas Peter Hasselbom
Jacobsen

1. Introduction

- In the SO ESC meeting Sep. 2020 we presented our approach to improve the survey
- The focus was on collecting data on the types of reserves that were exchanged or shared (FCR, aFRR, mFRR, RR).
- We also had to clarify the spikes of the data on volumes shared as some of the TSOs assessed it as reserves for emergency.
- As a result of the rerun of the survey we now have better data that can provide clearer conclusions. This will be shared in the next slides.

2. Action tracker

Jonas Peter Hasselbom
Jacobsen

ACTION TRACKER: Actions from the SO ESC Meeting

03/06/2020

- # 40: ENTSO-E to provide information concerning the exchange/sharing of the reserves (presented in the SO ESC meeting 3. June 2020).
- #48: (..) Survey (to) be expanded.
 - reach out to the TSOs who answered 'no' and ask the background of the answer
 - agrees to update the slides presented with the references to the Art 3 of SOGL including the definitions for “exchange of reserves” and sharing of reserves”
- #49: (...) impact of sharing and exchanging of the reserves on the cross-border capacities

#49: (...) impact of sharing and exchanging of the reserves on the cross-border capacities

Question: What is the impact of sharing and exchanging of reserves on the cross-border capacities?

With the implementation of EBGL it is now according to art. 38-42 a possibility to apply for reservation of transmission capacity between bidding zones for the purpose of exchanging reserves (Balancing Capacity).

EBGL operates with 3 different methodologies for reserving transmission capacity, but common for all methodologies is that transmission capacity can only be reserved if there is a higher welfare of using the transmission capacity in the Balancing Capacity market compared to the day-a-head market.

TSO's are obliged to develop some of these methodologies. If the reservation is done more than two days in advance only up to 10% of the transmission capacity can be reserved for the exchange of balancing reserves.

Conclusion:

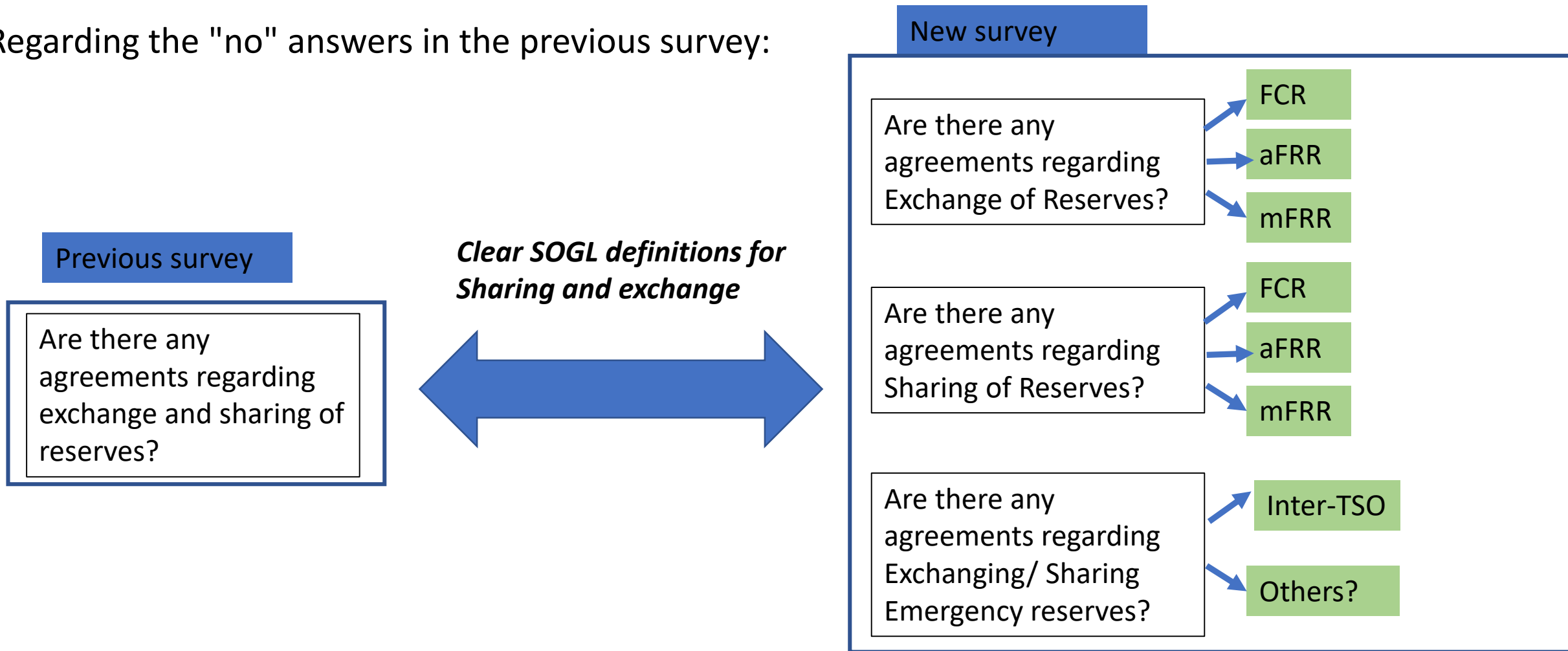
Therefore, Sharing or exchanges of reserves between LFC Blocks does not in itself have an impact on the capacity on borders. This is only the case if there are agreements in place reserving capacity. But this would have to be approved by the relevant regulators.

3. Extended survey

Jonas Peter Hasselbom
Jacobsen

Improvement of survey

Regarding the "no" answers in the previous survey:



Definitions

‘exchange of reserves’ means the possibility of a TSO to access reserve capacity connected to another LFC area, LFC block, or synchronous area to fulfil its reserve requirements resulting from its own reserve dimensioning process of either FCR, FRR or RR and where **that reserve capacity is exclusively for that TSO, and is not taken into account by any other TSO** to fulfil its reserve requirements resulting from their respective reserve dimensioning processes;

‘sharing of reserves’ means a mechanism in which **more than one TSO takes the same reserve capacity, being FCR, FRR or RR, into account** to fulfil their respective reserve requirements resulting from their reserve dimensioning processes;

Emergency Exchanges: We consider to clearly remove them from the first two. This contains all reserves that can be used (bilateral contracts) in case of emergency situations or all kind of Inter-TSO.

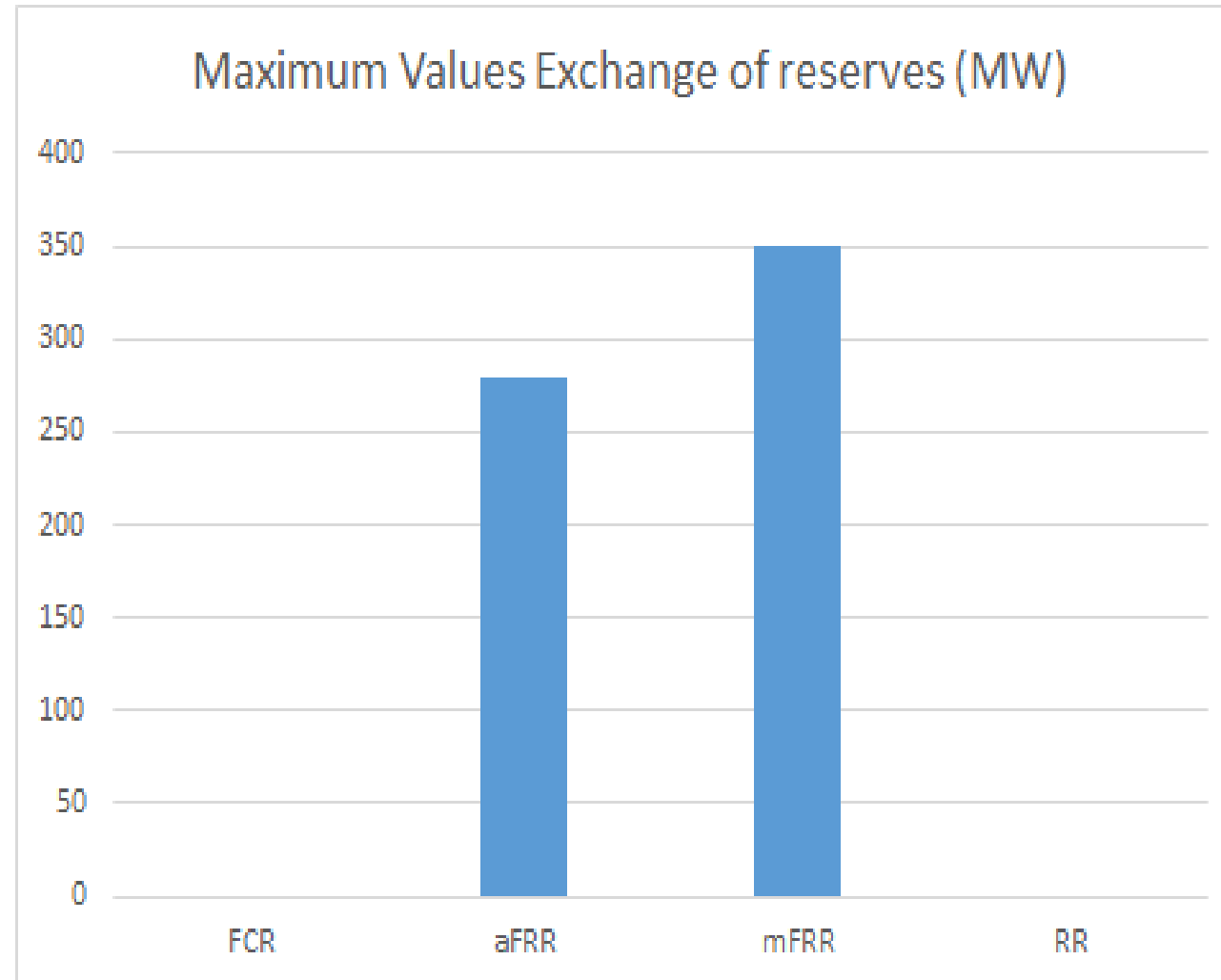
4. Updated results of the survey

Mohamed El Jafoufi

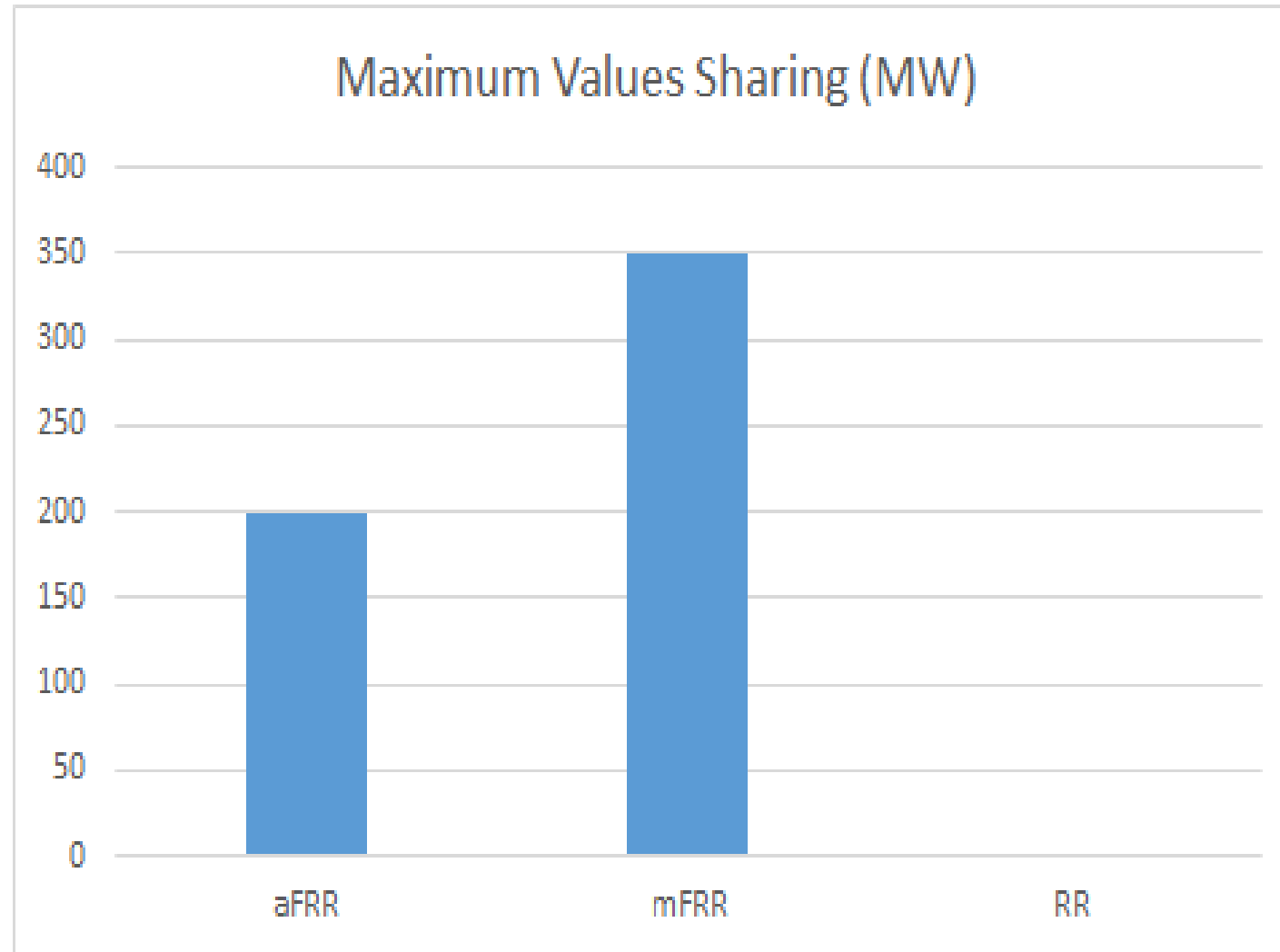
Updated results of the survey

LFC Blocks	24
Answered the survey	20
Have an agreements for exchange or sharing of reserves	11
Have an agreements for exchange	9
Have an agreements for sharing	5
Have both (Exchange & sharing)	3
within SA	6
Between two SA	4
Have both (within & between SAs)	2

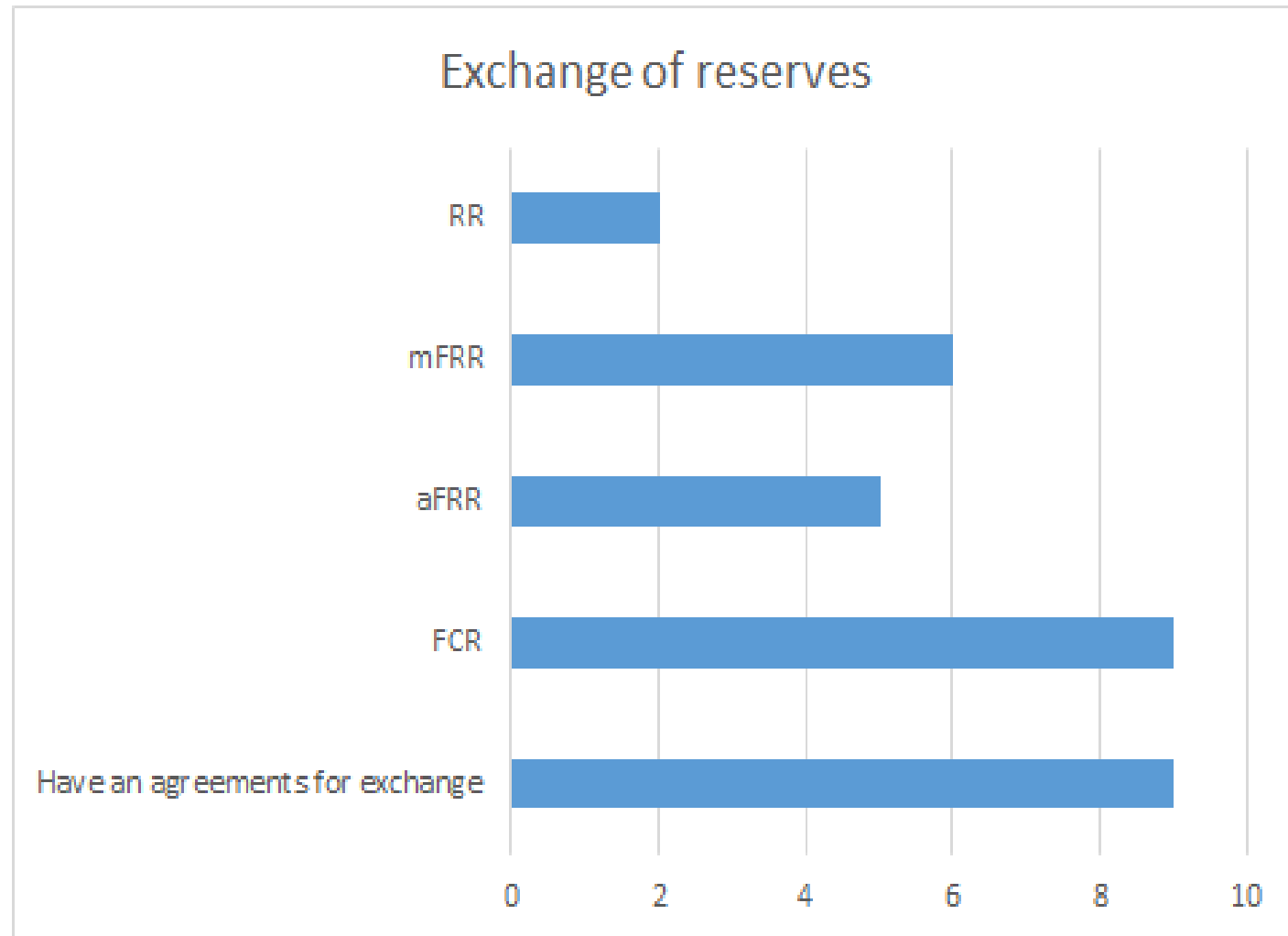
Maximum Values: exchange



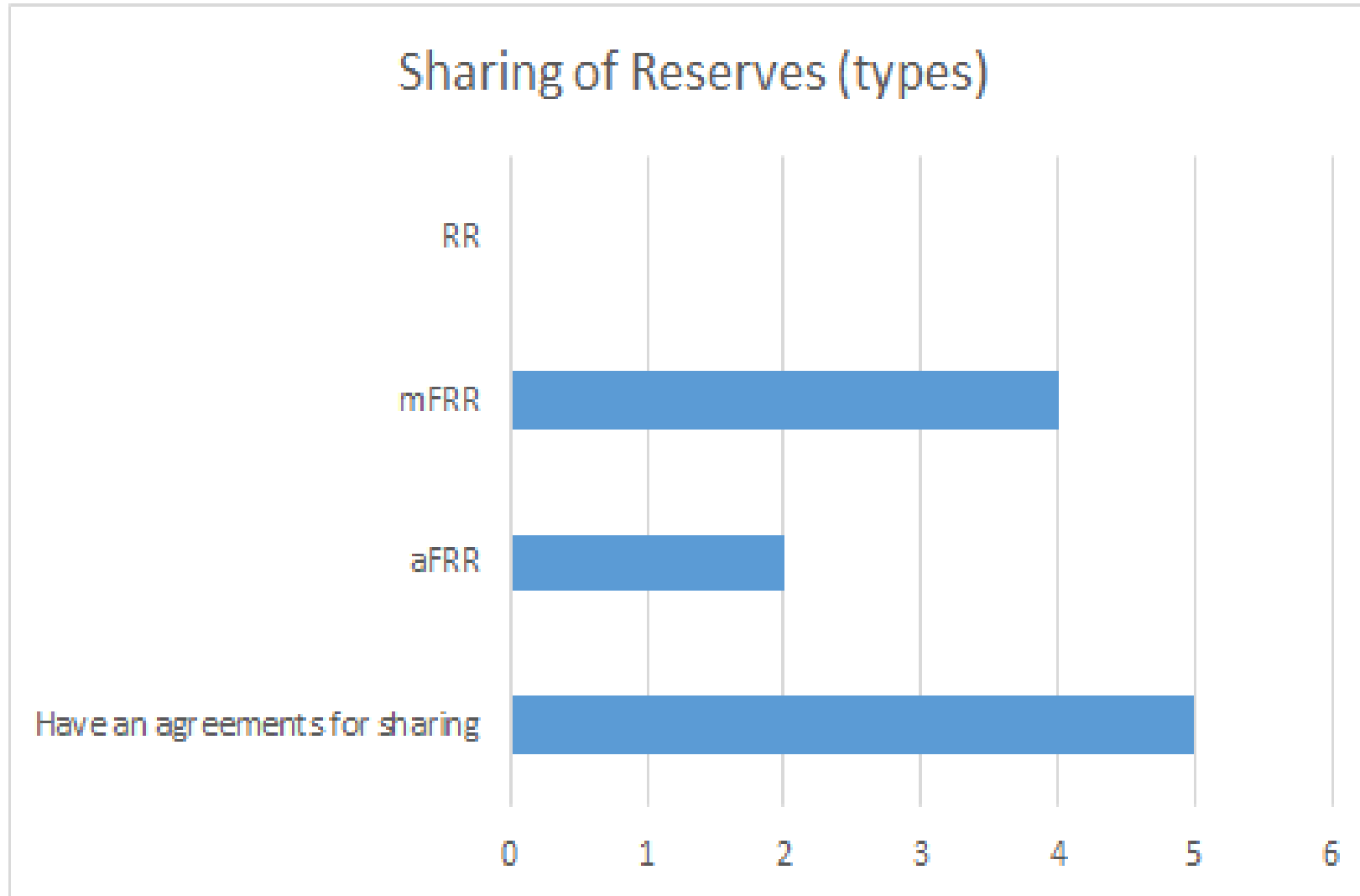
Maximum Values: sharing



Exchange of reserves: types



Sharing of reserves: types



5. Survey conclusions

Mohamed El Jafoufi

Survey Conclusions (updated)





- *The LFC-Blocks can have difference in their implementation which is normal due to local and historical characteristic of each control block*
- **20** out of 24 LFC Blocks **answered the survey**
- **Around 50%** of the LFC blocks have arrangements of sharing or exchanges of reserves
- The level of **shared** reserves are **200 MW aFRR and 250 MW mFRR**
- The level of **exchanged** reserves are **280 MW aFRR and 350 mFRR**
- We have not considered the type of arrangements for the agreements relevant for when the system is in emergency state.




Top 4. CGM Program Implementation Update

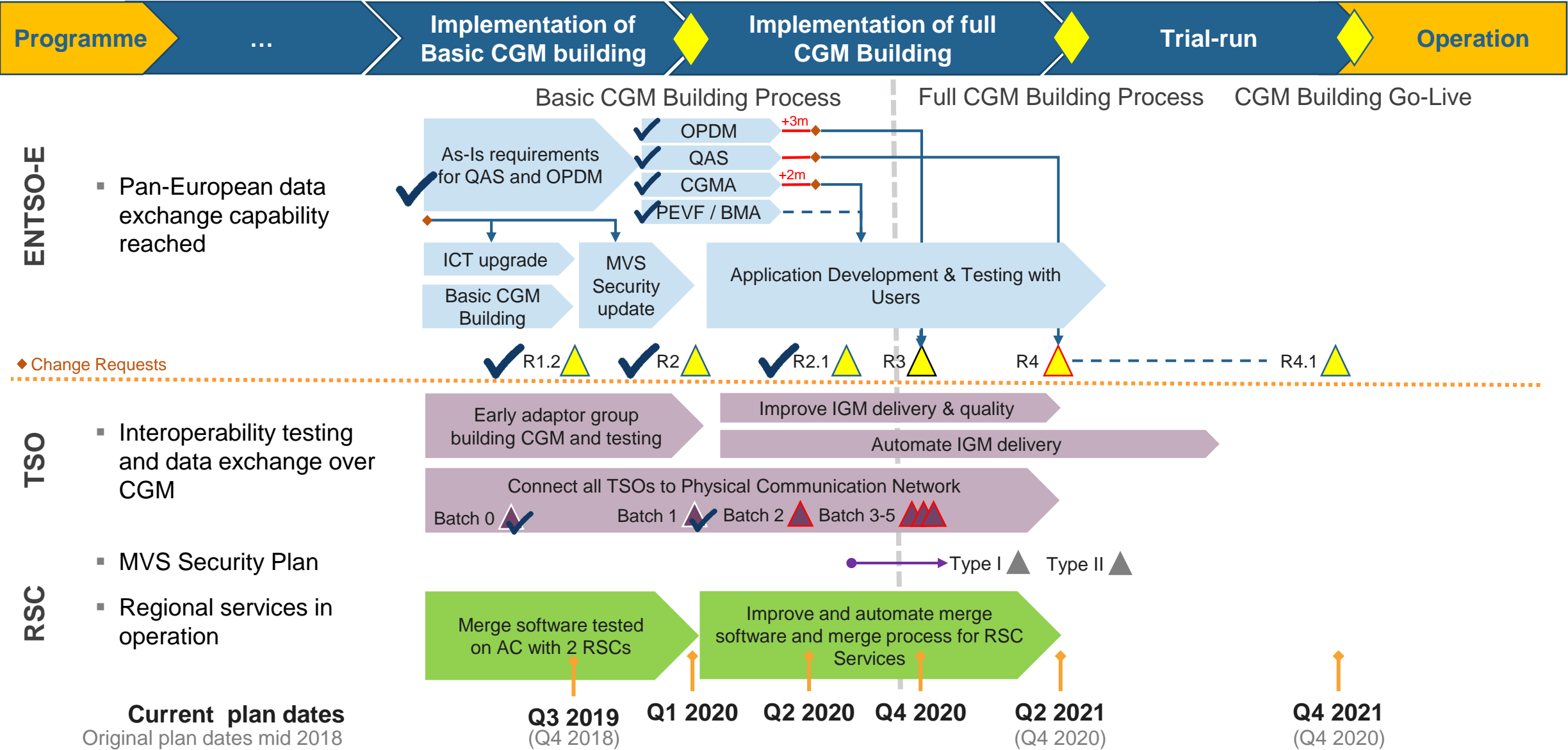
Derek Lawler

CGM Executive Summary

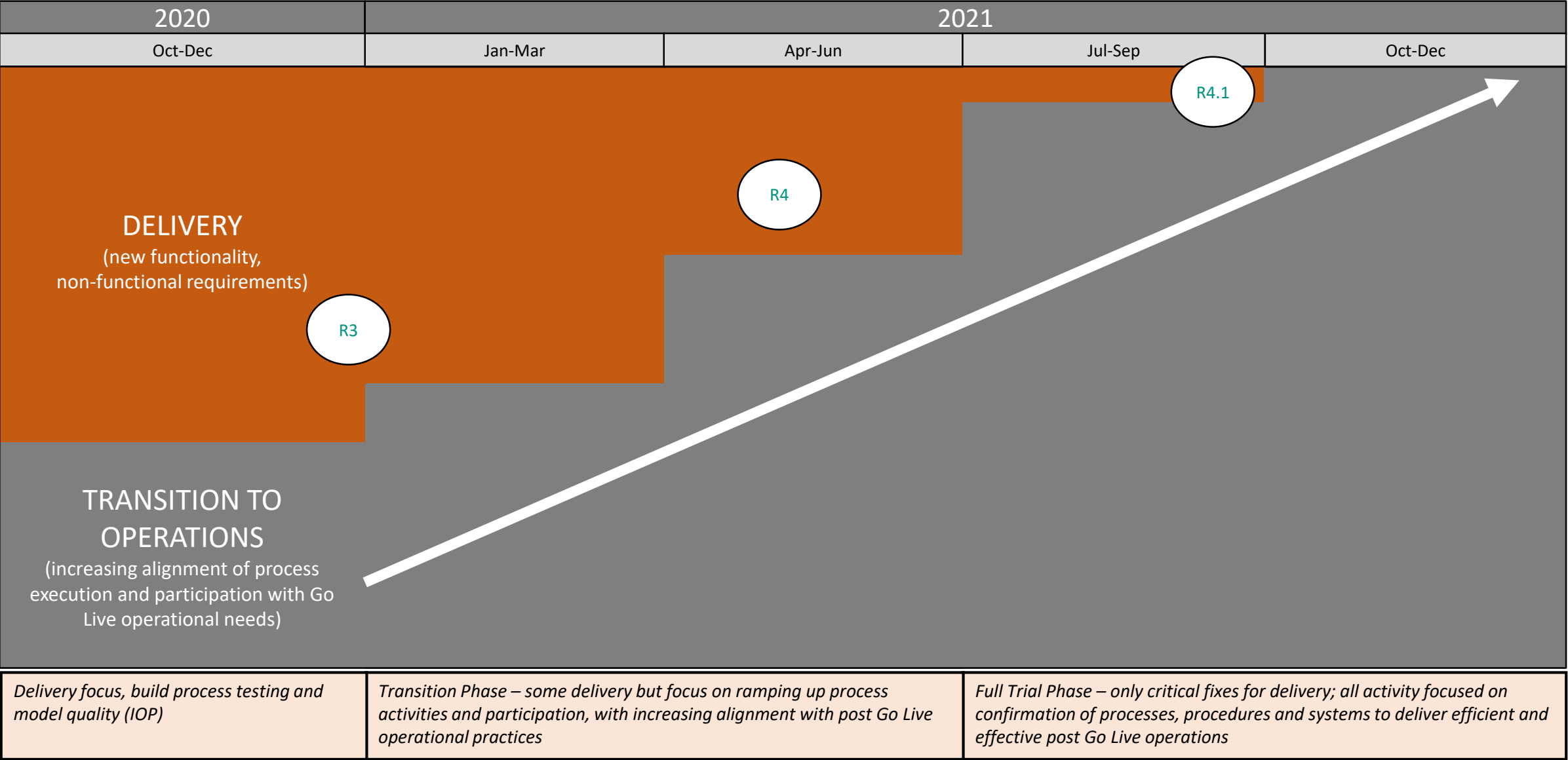
Milestone	Schedule	Status
Physical Communication Network (PCN)	Q1 2021	
OPDE Release 3.0	End Q4 2020	
OPDE Release 4.0	End Q2 2021	
CGM Build Process Go-Live (Minimum Viable Solution)	Q4 2021	

-  On track
-  At risk / Delayed
-  Intervention needed

Overall CGM Programme plan



Solution Delivery: Transition from Delivery to Operations



CGM Business Test

CGM Solution Delivery has defined different tests, to ensure that the CGM process and functionalities will be delivered and working as expected.

Test	Description
1 Basic CGM Build Process Test	The Basic CGM Build Process tests the basic business process and its related software applications. The test shows if the overall process is working within its expected process times and if the data is delivered, merged and processed as required. The Basic CGM Build Process shows the status of the maturity of all software applications and stakeholders.
2 Non-functional requirements test	The non-functional requirements tests will ensure that the OPDE platform is capable to fulfil the quality and performance requirements, which have been defined in the Business Requirements specifications
3 User Acceptance Testing (UAT)	The UAT is a verification of the functionalities and requirements from a user point of view. In the context of the CGM Programme the intent of the UAT is to verify the delivered functionalities of new OPDE releases.
4 Interoperability Test (IOP)	The IOP is executed on a monthly basis by the Building Process Working Group on behalf of the Business Lead Manager. This monthly test aims at increasing the compliancy of TSOs' and RSCs' provisions with quality standards by providing detailed feedback.

Note: Integration testing (e.g. Factory Acceptance Test, Site Acceptance Test) are not shown.



Questions?



Top 5. Deterministic Frequency Deviations

Bernard Malfliet

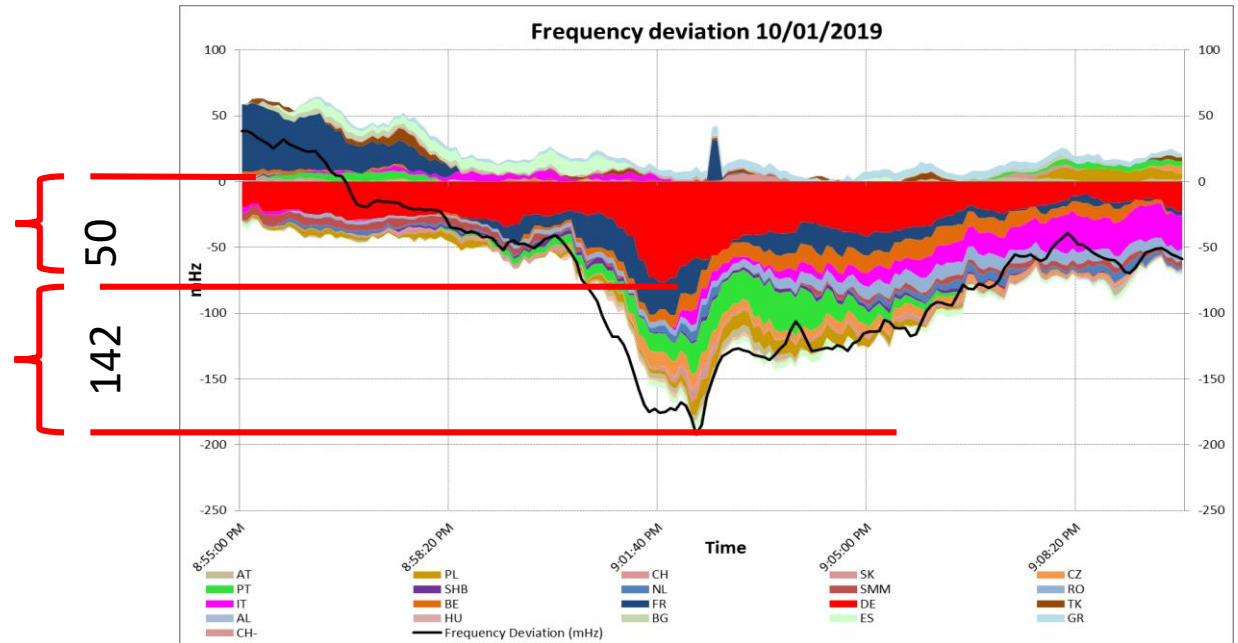
Continental Europe Significant Frequency Deviations January and October 2019

Bernard Malfliet
Entso-e SFD TF leader

SO CG, SO ESC
9 December 2020

CE Frequency Deviations reminder

- Between 9th and 11th January 2019, CE experienced the following:
 - A long-lasting frequency deviation (**LLFD**), averaging 30 mHz and about **50 mHz** on 10th January at 21:00,
 - A Deterministic Frequency Deviation (**DFD**) during the evening peak-load at the hourly schedule transition of about **142 mHz**;



The cumulative effect of the permanent frequency deviation due to the frozen measurement, in addition to the large evening DFD, culminated **on 10th January at 21:02 when the steady-state frequency in the CE system reached 49.808 Hz.**

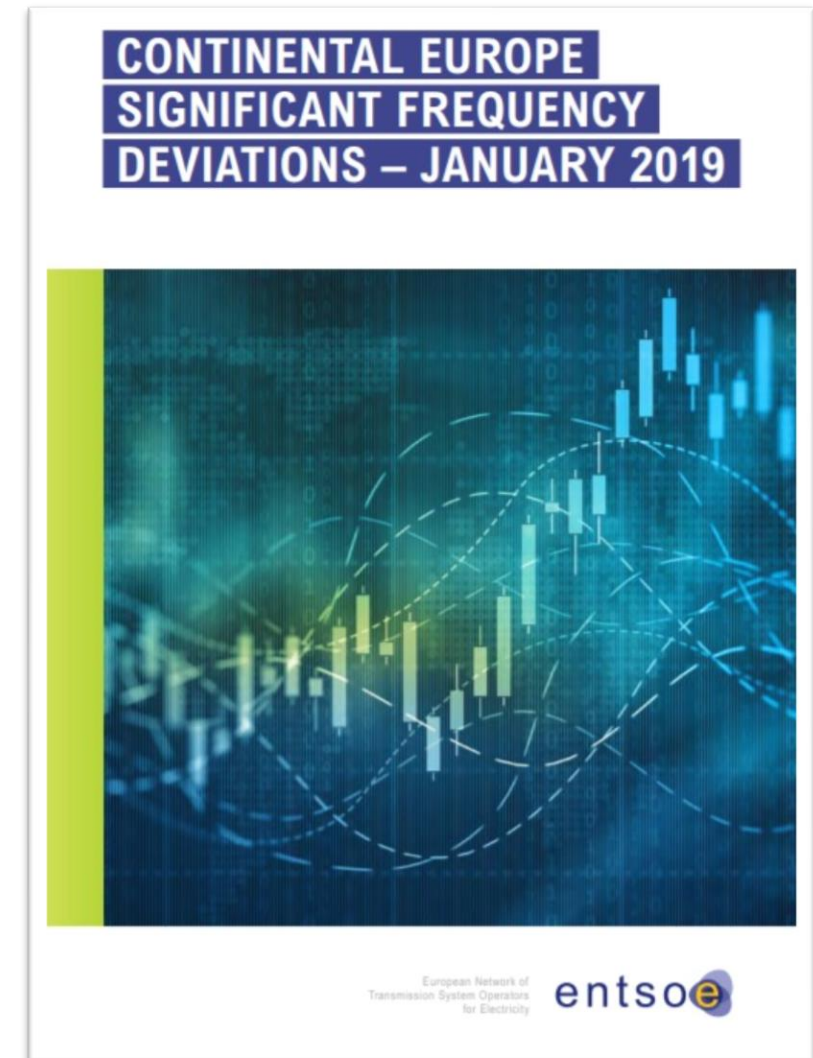
Both effects need effective mitigation measures to avoid reoccurrence of this situation

TSOs have worked hard and can now present

- The measures taken to prevent, detect and resolve the LLFD
- The mitigation measures envisaged or implemented to reduce DFD

ENTSO-E Investigation

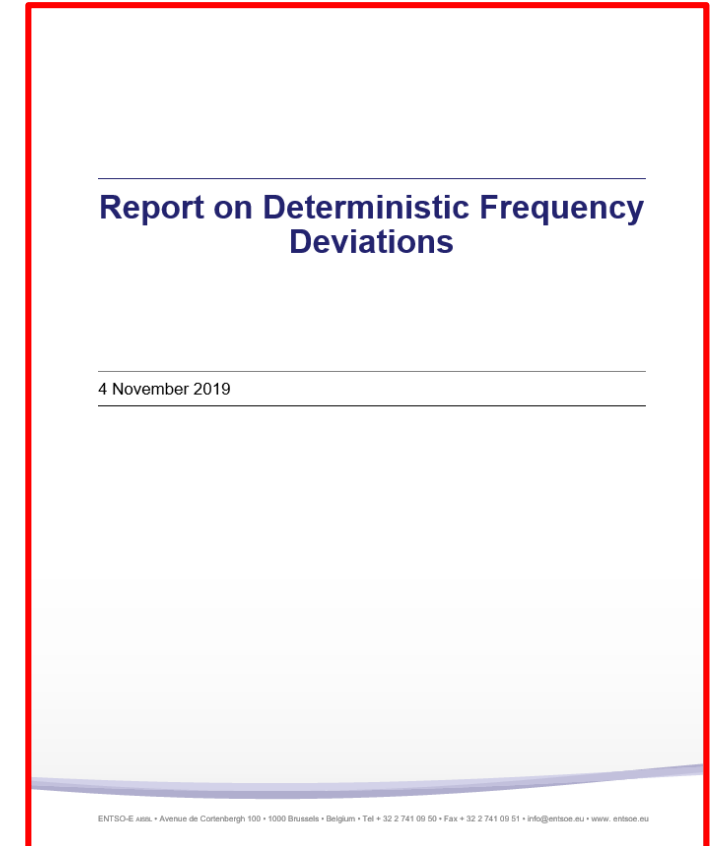
- In February 2019, ENTSO-E created a dedicated Task Force
 - to investigate the events during January 2019
 - to identify the Causal Factors
 - to propose mitigating actions for preventing a re-occurrence of this type of event
- In May 2019, ENTSO-E published a Technical Report
- <https://www.entsoe.eu/news/2019/05/28/entso-e-technical-report-on-the-january-2019-significant-frequency-deviations-in-continental-europe/>



ENTSO-E Investigation

- On 1st December 2019, ENTSO-E published a Second Technical Report specifically on DFD
- ENTSO-E also launched a two month public consultation beginning on 1st December 2019 on the subject of DFD
- The results of the consultation are in a new release of the report, published in November 2020

-



Market and/or TSO proposals to mitigate against DFDs

Proposed measures	<ul style="list-style-type: none">• All control block managers have investigated the DFD contribution of the control block and have proposed mitigation measures• Following mitigations have been proposed<ul style="list-style-type: none">• Introduce 15 minute MTU and ISP for internal market area trading (most control blocks)• Introduce the 15 or 30 minute MTU in intraday (by end of this year) and day-ahead (in a few years) on cross-border trade (mainly in CORE region)• Restrictions on ramping speed for fast acting generation units (several control blocks)• Introduce ramping on schedules for BRPs• Increase the availability of fast acting aFRR or mFRR reserves (in several control blocks)
Current status	<ul style="list-style-type: none">• The list of proposed mitigations has been presented to all Continental Europe TSOs, and a regular follow-up on progress has been agreed. End of this month a first update will be presented by all control block managers• The target values of maximum contributions from each control block have been agreed and added to the SAFA of Continental Europe• The reporting of the DFD contribution of each control block has been developed and is now in test phase
Next steps	<ul style="list-style-type: none">• Continue the implementation of all mitigation measures• Follow-up of the DFD contribution of each control block in the TSO decisional body and decide on the right time to commence the enforcement of the target values

Measures on long lasting frequency deviations

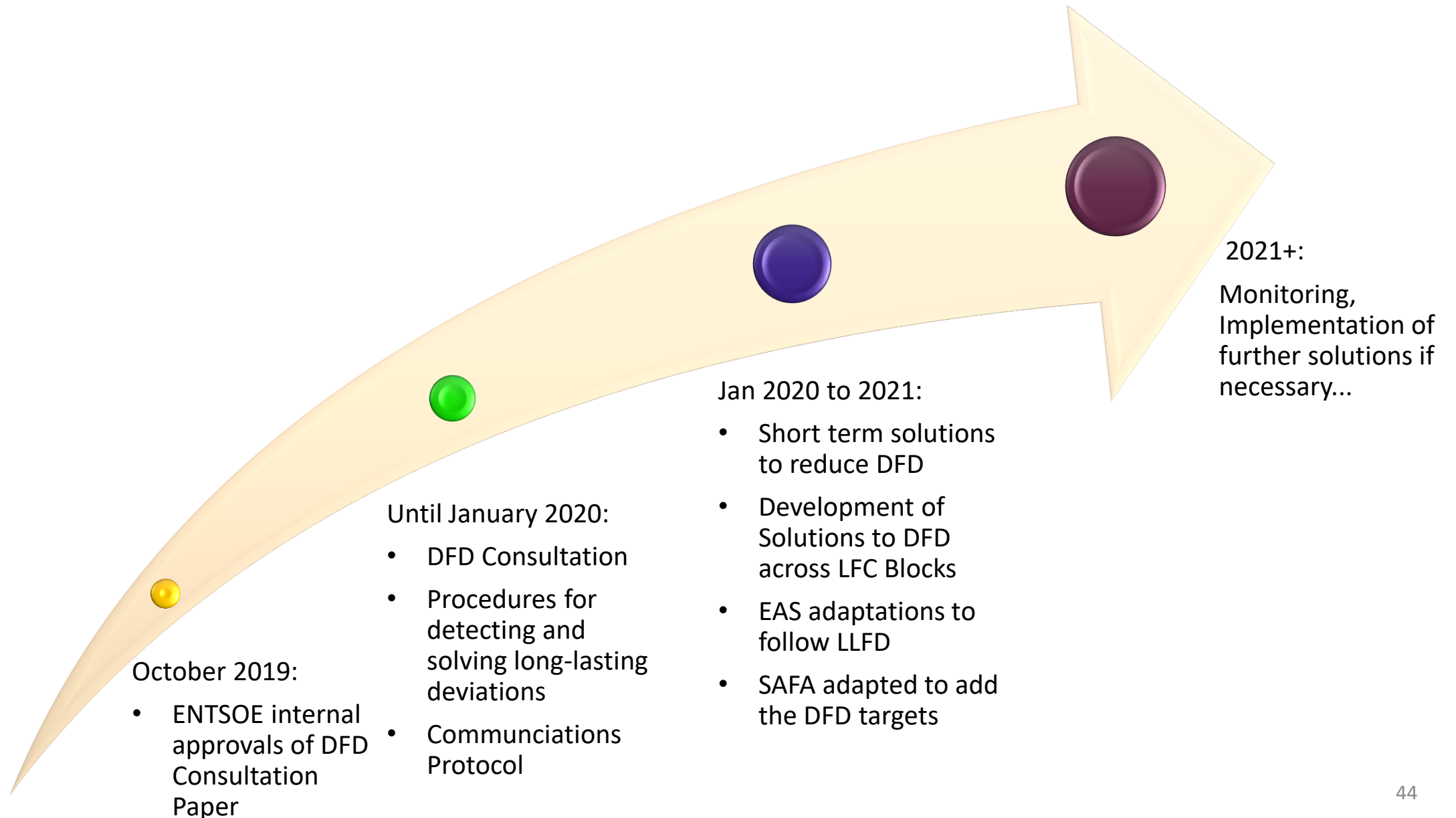
- Fail-safe measurement and telecommunication standards used by LFC, across CE have been established
- Control System functionality standards, to detect “frozen” LFC values, across CE have been identified and a list of mitigation measures has been implemented locally
- European Awareness System Functionality has been extended to help detect LLFD
- EAS has additional alarm states defined for CC South and CC North related to the frequency deviations
- Traffic lights for frequency are set automatically by the system. The CC calculates the alarms and then send it to EAS. This way all TSOs know that there is a frequency issue that needs to be investigated.
- Discrepancy checks in EAS by having individual border flows
 - Step 1: automatic reporting of discrepancies in EAS
 - Step 2: automatic highlighting of mismatches in EAS

Measures on long lasting frequency deviations (2)

- Quality checks on FRCE values are regularly performed to increase the reliability of data in EAS.
- A new trigger criteria has been implemented to detect LLFD : 6 seconds time deviation in 4 hours (or less). This creates a trigger on average 6 times per year. EAS will then also set to Yellow
- An additional Operational Procedure to consider Long-Lasting Frequency deviations has been developed
 - A checklist is defined on what a CC has to do and a checklist for each individual TSO. These checklists are followed when a Yellow alarm on frequency is generated by the CC
 - The check list for individual TSOs has been distributed.
 - All TSOs have added the individual checklist in the control room to local procedures.

Entso-e intends to publish more details on the implemented measures in an LLFD report by start of next year

ENTSO-E Recommendations Timeline





Top 6. AoB

Dates for 2021

- | | |
|----------------|-------------|
| • SO ESC | GC ESC |
| • 10 March | 09 March |
| • 09 June | 10 June |
| • 22 September | 23 Sept |
| • 08 December | 07 December |