WG Balancing of 05th May 2022

Hybrid meeting –

05/05/2022

For a smooth teleconference with 30+ people …
Some rules apply

- Please put yourself on mute at any time that you are not speaking to avoid background noise.

- If you receive a call, please ensure that you do not put this meeting **on hold.**

    - You can quit and reconnect later on.

    - You will be muted or kicked out of the session, if necessary.

- You will be requested to hold your questions for the end of each presentation.

    - Should you have a question, please notify via Teams or speak out if you are only via phone.

    - Share your question (with slide number) in advance so all participants may follow

    - Before you share your question, please announce yourself.

- If you have a poor internet connection, please dial-in.

- Finally, please be courteous and let people finish their sentences.

    - It is practically impossible to follow when 2 people are speaking at the same time in a teleconference.

Agenda

09:00 – 09:10: Introduction and minutes

09:10 – 09:50: EU Balancing Program Update

09:50 – 10:50: Imbalance price – aFRR component

Coffee Break

11:00 – 11:30: Implementation of CRI computation

11:30 – 11:40: DARE dimensioning results for 2021

11:40 – 12:20: 2021 Year Overview

AOB

- Launch of FCR Additional Properties public consultation
- Current status of participation of stakeholders in workshops
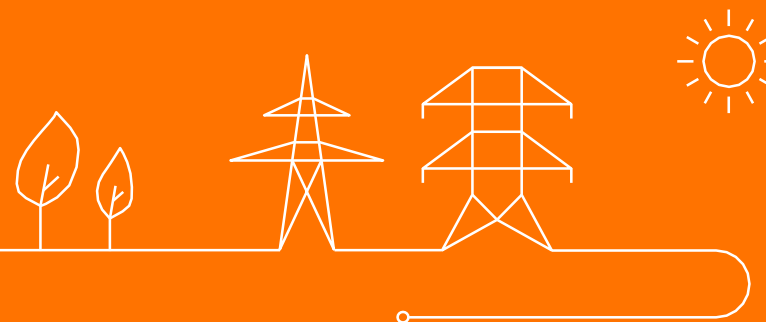
Minutes of Meeting for approval

Minutes of Meeting of WG Balancing on 24th of March 2022:

- No comments received from the stakeholders.

EU Balancing Program update
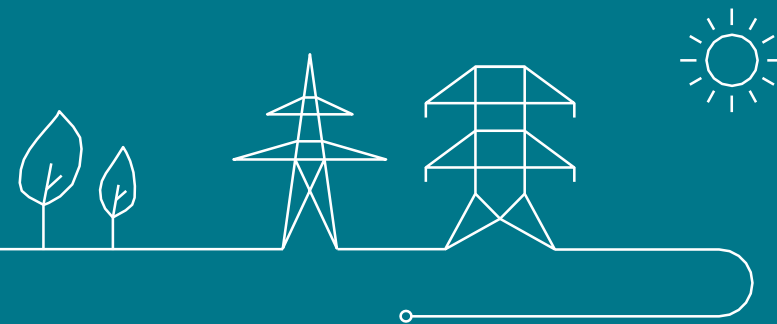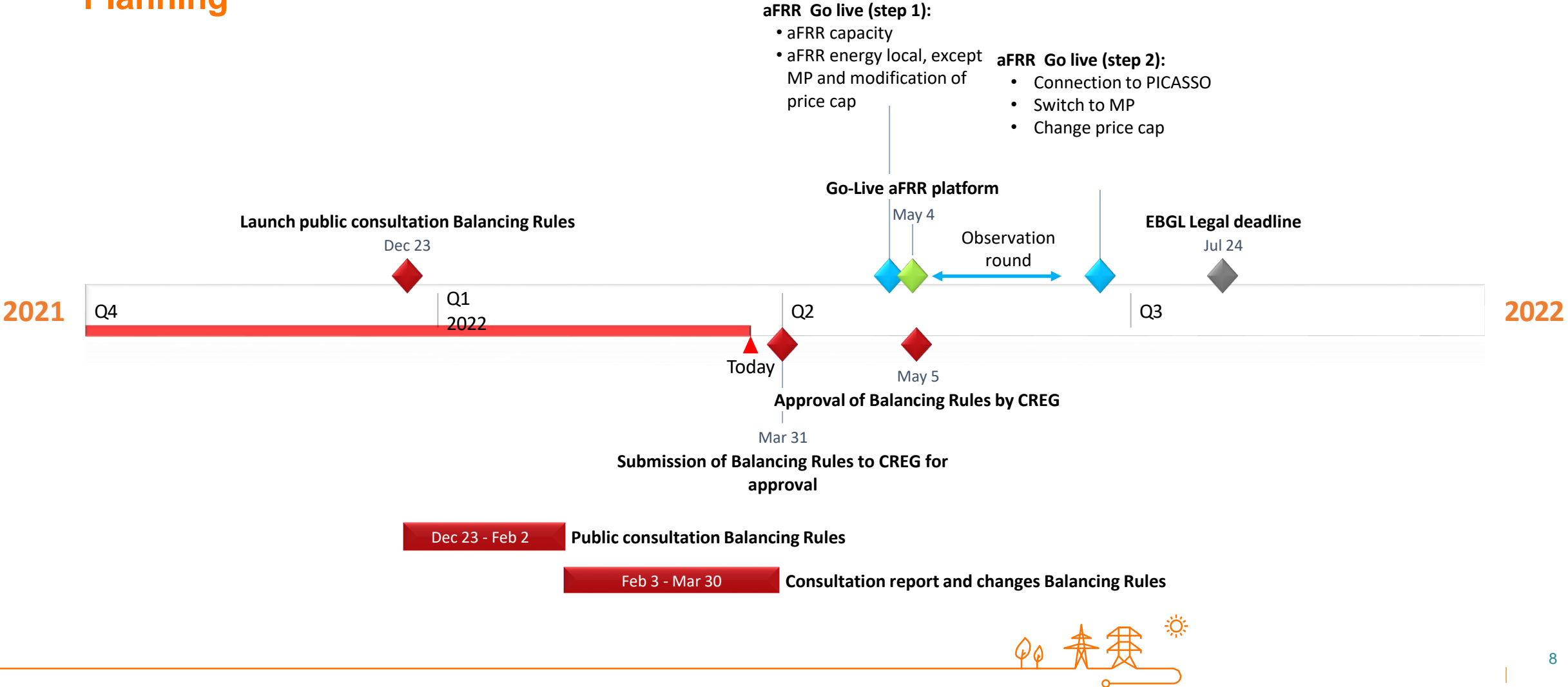
Presented by Cécile Pellegrin

Agenda

- aFRR go-lives: status and next steps

- Other Stakeholder management interactions

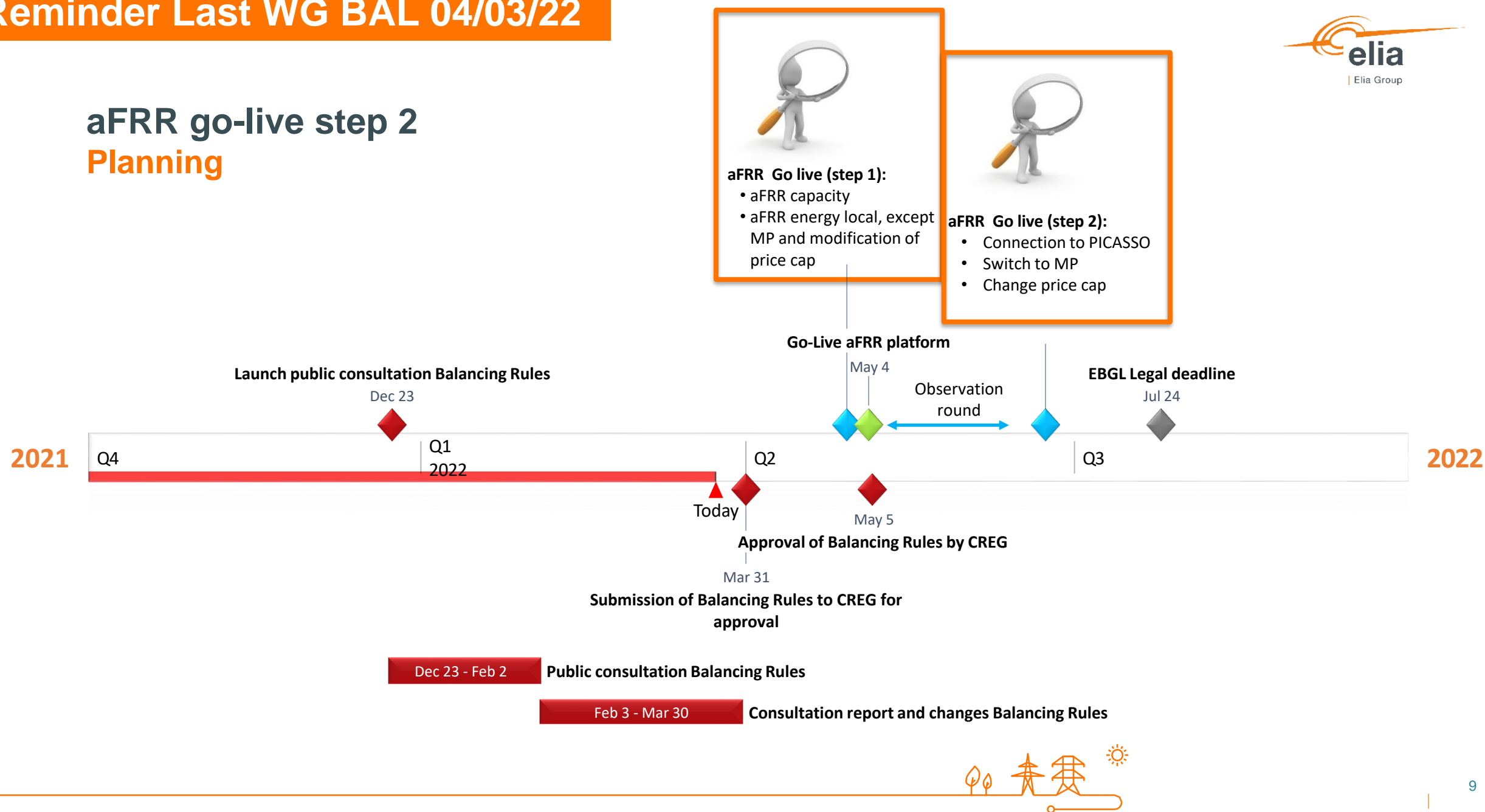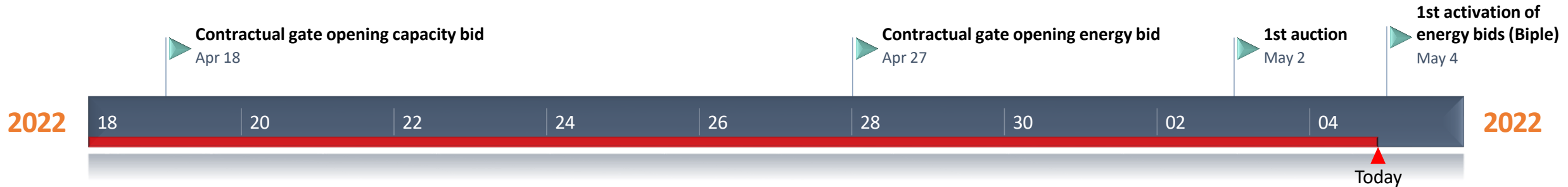# aFRR go-lives: status and next steps

aFRR go-live step 2
Planning

aFRR Go live (step 1):
- aFRR capacity
- aFRR energy local, except MP and modification of price cap

aFRR Go live (step 2):
- Connection to PICASSO
- Switch to MP
- Change price cap

Go-Live aFRR platform
May 4

Observation round

EBGL Legal deadline
Jul 24

Launch public consultation Balancing Rules
Dec 23

2021   Q4   Q1 2022   Q2   Q3   **2022**

Today

May 5

Approval of Balancing Rules by CREG

Mar 31

Submission of Balancing Rules to CREG for approval

Dec 23 - Feb 2   **Public consultation Balancing Rules**

Feb 3 - Mar 30   **Consultation report and changes Balancing Rules**

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aFRR Step 1 Go live

Contractual gate opening capacity bid
Apr 18

Contractual gate opening energy bid
Apr 27

1st auction
May 2

1st activation of energy bids (Biple)
May 4

2022

| 18 | 20 | 22 | 24 | 26 | 28 | 30 | 02 | 04 |

2022

Today

aFRR Capacity

- Successful go-live, auctions for the first delivery days were operated as planned

- The auction data is available on open data

- Both all-CCTU and single CCTU bids were selected in line with what was expected from the design

- More extensive analyses of the new design will follow when results would be sufficiently representative

aFRR Energy

- First activation based on the new bidding took place on the 4th of May

- Elia would like to apologize again for the technical issue (now solved) that may have led to a breach of confidentiality of the aFRR energy bids for delivery date 04/05/2022.

aFRR go-live step 2

- German TSOs announced earlier this week they are postponing their connection to PICASSO on the 22nd of June. The planning of the EU TSOs, including Elia, needs to be adapted based on this new element

- Elia still plans to introduce the balancing rules by the end of March, based on the compromise solution presented (see previous slides)

- Elia is aware of the risk related to the approval of the balancing rules. However:

  - Elia has taken all feedbacks received to the best of its abilities, while guaranteeing operational security
  - Clarity on the calculation of the imbalance price is needed in order to prepare the analyses that will be performed before PICASSO go-live

- Elia reminds that the approval of the balancing rules is a prerequisite for the connection to PICASSO

- 2nd condition for a successful go-live: an evaluation confirming that the connection to PICASSO does not lead to a blocking point for the efficient functioning of the Belgian balancing market
 Note: this evaluation will highly depend on available ATCs

aFRR go-live step 2
Proposed planning

WG BAL
Jun 22

Go-Live aFRR platform (*)
Jun 22

EBGL Legal deadline
Jul 24

WG BAL
Sep 15

aFRR Go Live (step 2)
Sep 27

2022 Apr | May | Jun | Jul | Aug | Sep | Oct **2022**

Today

Approval of Balancing Rules by CREG

Submission of Balancing Rules to CREG for approval

Finalisation balancing rules

Approval process

May 23 - Jun 28 **Observation round: define methodology**

Jun 22 - Aug 26 **Observation round: gather data and prepare tool for analysis**

Aug 29 - Sep 7 **Observation round: perform analyses**

Sep 8 - Sep 19 **Observation round: CREG and stakeholders interaction**

Commitment needed from all stakeholders to take a common decision in this period

(*) Platform will go live on 1st of June but exchanges will start at the connection of the German TSOs on 22nd of June

Other Stakeholder management interactions
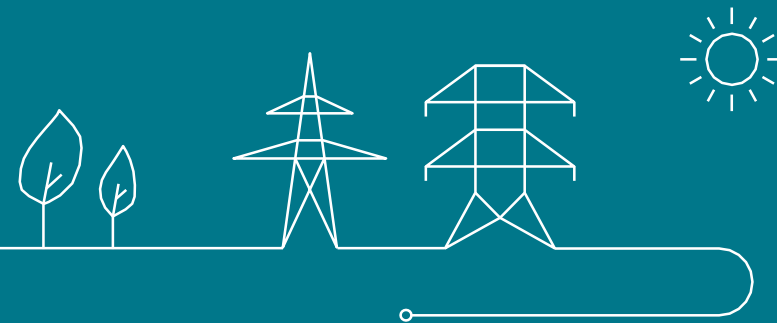
Others stakeholder management interactions

- *Public Consultations*

  - *T&C BSP aFRR -> Consultation finalized and proposal submitted to CREG*

  - *Balancing rules -> See previous presentation*

- *Next planned interactions:*

  - *aFRR Energy Management Strategy (EMS) Requirements*

    The feedbacks received from several stakeholders after the workshop of 24/02 have been further analyzed, discussed and taken into account. The requirements are being finalized. As there are some evolutions compared to the content of the workshop, the requirements will be informally consulted in the coming weeks.

  - *Updated mFRR design note*

    Elia recently received feedbacks on the mFRR design from the stakeholders and started their analysis. Next steps will be confirmed after this analysis.

    In case of complementary expected feedbacks, please inform your KAM Energy as soon as possible.

  - *BSP Testing environment for mFRR and iCAROS phase 1*

  - *BSP Facilitations : adhoc meeting to be organized in June*

Imbalance Price – aFRR component

Presented by Caroline Bosschaerts
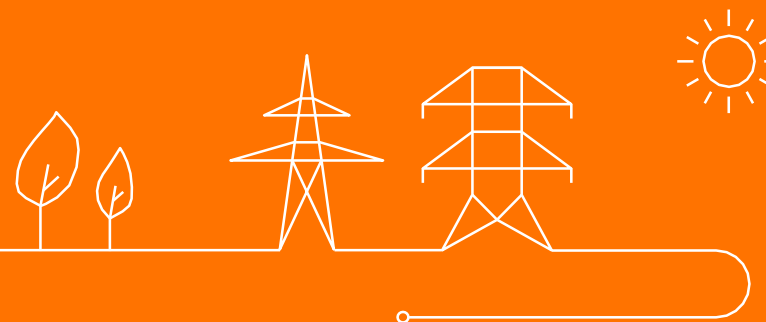
Context

➤ Between 18 December 2021 and 02 February 2022, Elia organized a public consultation on its new proposal for the "balancing rules"

➤ Elia received 2 non-confidential answers from Febeg and Febeliec

➤ Based on this feedback, Elia adapted its proposal. A summary of the answers to the public consultation, as well as an explanation of the adapted proposal were provided in WG BAL of March 24th. During this meeting, Elia committed to analyzing whether its proposal regarding the calculation of the MIP/MDP could be further improved to better answer the needs of the different market parties, while guaranteeing the operational security of the grid.

➤ Elia therefore developed a new proposal for the calculation of the MIP/MDP that will be the focus of this presentation. Each element of this new proposal aims at fulfilling the needs that market parties expressed in their answers to the public consultation (highlighted in blue here below), while guaranteeing grid security.

➤ Elia intends to submit this proposal to the CREG in the coming days to avoid jeopardizing the connection to Picasso (see previous presentation)

Stakeholders' feedback

➤ Febeg suggests **an alternative proposal** :

$$IP^{\square} = \frac{\sum oc\,[(abs(aFRR\;SD\;oc,j))\;x\;CBMP\;oc,j]}{\sum oc\,(abs(aFRR\;SD\;oc,j))}$$

which it considers more appropriate because :
- It includes all optimization cycles, striving to better indicate when a (strong) implicit reaction is useful and when it isn't
- It uses the CBMP for each optimization cycle, striving to find a EU optimum from a social welfare perspective

➤ Febeliec is adamant that a strong link between the Belgian imbalance and the Belgian imbalance price is essential, even if this implies that BRPs and BSPs will be exposed to different price signals

Main principles of new proposal

Stakeholders' feedback

> FEBEG suggests an alternative proposal :

$$IP^\square = \frac{\sum oc \,[(abs(aFRR\ SD\ oc,j)) \times CBMP\ oc,j]}{\sum oc \,(abs(aFRR\ SD\ oc,j))}$$

which it considers more appropriate because :
- It includes all optimization cycles, striving to better indicate when a (strong) implicit reaction is useful and when it isn't ③
- It uses the CBMP for each optimization cycle, striving to find a EU optimum from a social welfare perspective ①
> Febeliec is adamant that a strong link between the Belgian imbalance and the Belgian imbalance price is essential, even if this implies that BRPs and BSPs will be exposed to different price signals ③

1

Objective 1 - Benefiting from EU integration

The price is based on the volume weighted average of the Cross-Border Marginal Prices of the uncongested area as long *as the resulting price signal does not incentivize BRPs to aggravate BE SI*

2

Objective 2 – Without jeopardizing grid security

If the resulting price signal incentivizes BRPs to aggravate BE SI (meaning that the flex available abroad is – in average – cheaper than the flex available in BE), this price is capped (resp. floored) at VoAA down (resp. up) depending on the direction of the BE zone. The resulting price signal is to be "neutral" (i.e. no strong incentive for BRPs to deviate from their position)

Cap at VoAA down to ensure IP does not aggravate BE situation

3
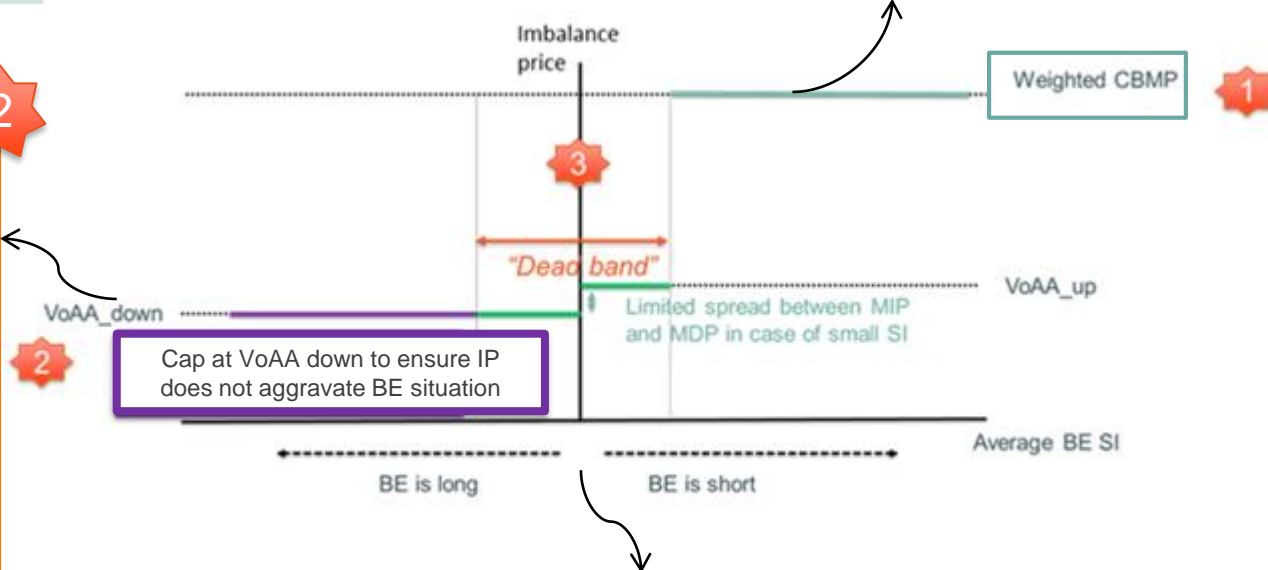
Objective 3 – Moderating the price signal when BE is close to equilibrium

A concept of "dead band" is introduced to moderate the price signal when a (strong) implicit reaction from the BRPs is not necessary (i.e. when BRPs properly did their job to balance the system)

1

A volume weighted CBMP is used to benefit as much as possible from EU integration

Net satisfied demand (SD) EU uncongested area
Satisfied demand (SD) Elia

① ② ③ ④

Price

CBMP (down)   CBMP (up)   CBMP (down)   CBMP (up)

Volume   Abs (aFRR SD)
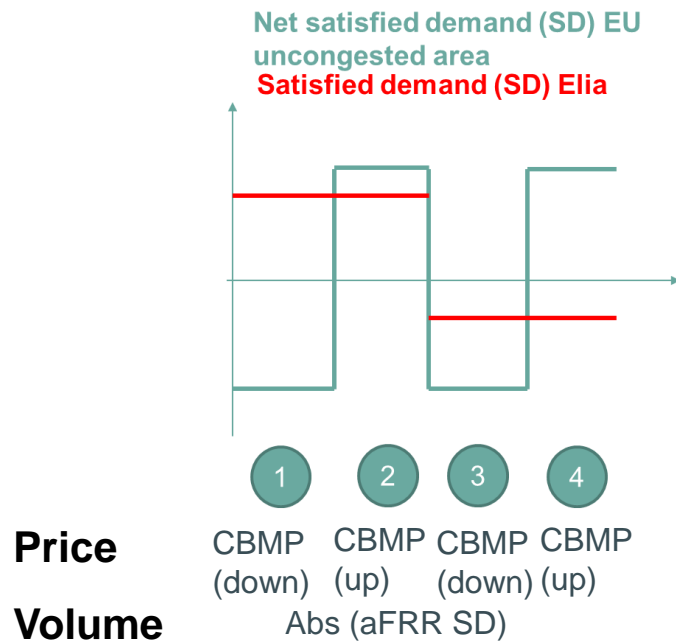
$$\frac{\sum_{OC \ j=qh}\big(abs(aFRR \ SD_{OC,j}) * CBMP_{OC,j}\big)}{\sum_{OC_{j=qh}}\big(abs(aFRR \ SD_{OC,j})\big)}$$

➢ Associating the CBMP to all the optimization cycles generally provides incentives to BRPs to optimize the EU dispatch

➢ However, in some situations, the resulting price signal incentivizes the BRPs to aggravate the Belgian System Imbalance in an uncontrolled way (i.e. without taking the residual transmission capacity or the reserves locally available into account). This could result in uncontrolled implicit reaction that jeopardizes grid security and causes additional balancing capacity reservation costs for the Belgian consumer, which is not acceptable for Elia, as TSO.

     ➔ Elia suggests to apply a cap/floor on this price signal **2**

➢ Besides, the resulting price signal could provide incentives for strong implicit reaction when it is not required because the Belgian system is close to be balanced

     ➔ Elia suggests to introduce a "dead band" in the price formation **3**

Cap/floor are introduced to avoid jeopardizing grid security

Imbalance price

3 — Weighted CBMP if EU is very short

Floored at VoAA_up

VoAA_up

2 — Weighted CBMP if EU is more or less balanced

VoAA_down

Capped at VoAA_down

Average BE SI

BE is long   BE is short

1 EU is very long
2 EU is ~balanced
3 EU is very short

Weighted CBMP if EU is very long

1
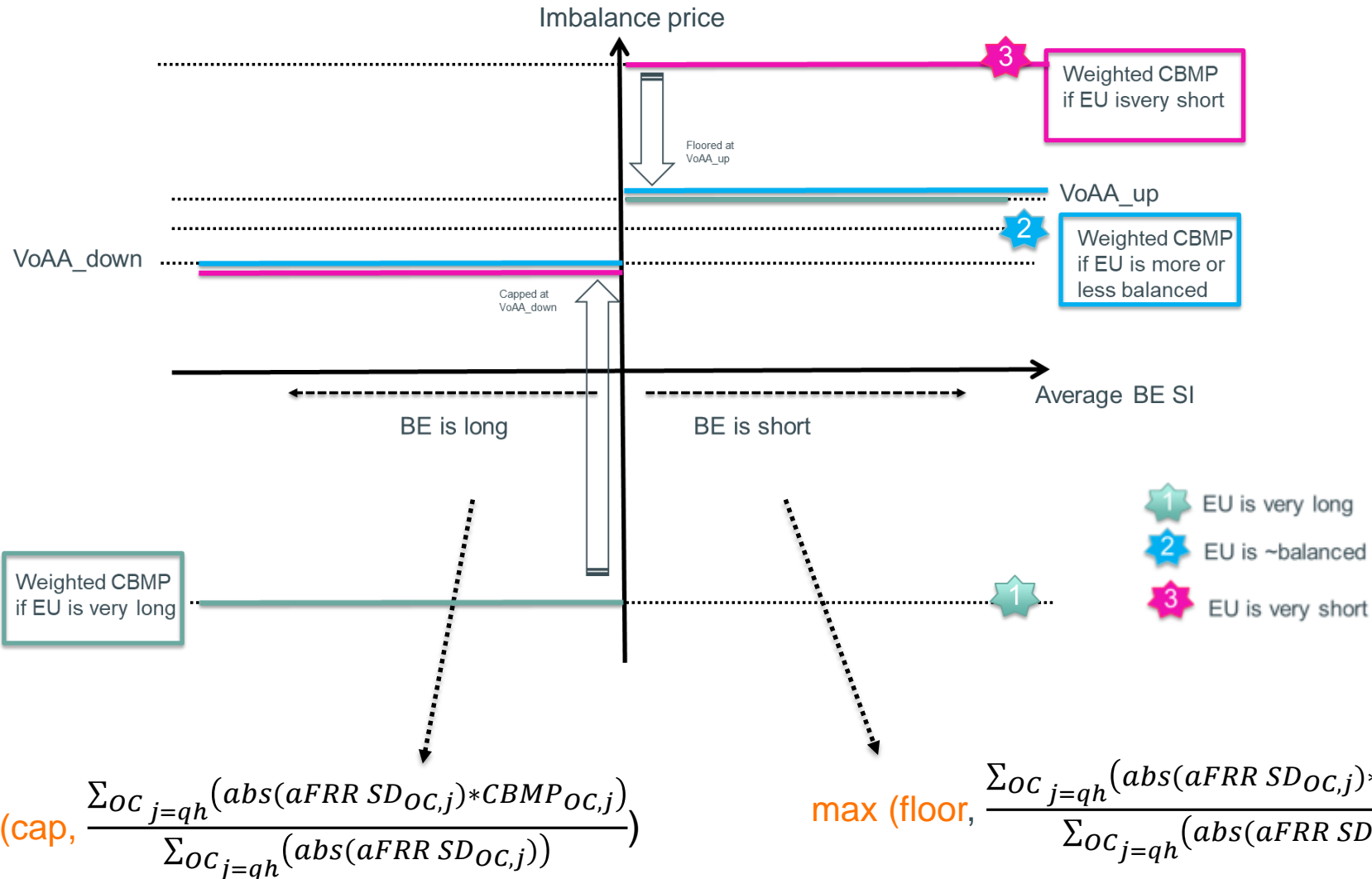
- The purpose of the cap/floor is to provide the most neutral price signal as possible to BRPs when cheaper flexibility is available abroad. This way, the BRP is not incentivized to aggravate the BE SI, but it is not incentivized to reduce the BE SI either (because by doing so he would activate more expensive resources locally than what is available abroad)

- The VoAA, defined as the price of the first bid of the FRR (i.e. aFRR + mFRR) balancing energy bids available for the TSO at the BAL GCT, is the most neutral price signal available today (in the absence of a strong ID index)

$$\min\left(cap, \frac{\sum_{OC\ j=qh}(abs(aFRR\ SD_{OC,j})*CBMP_{OC,j})}{\sum_{OC\ j=qh}(abs(aFRR\ SD_{OC,j}))}\right)$$

$$\max\left(floor, \frac{\sum_{OC\ j=qh}(abs(aFRR\ SD_{OC,j})*CBMP_{OC,j})}{\sum_{OC\ j=qh}(abs(aFRR\ SD_{OC,j}))}\right)$$

The values of the cap and floor are determined to discourage market manipulation

VoAA is the value of the first bid of the aFRR+mFRR LMOL, which can be easily influenced by a small "dummy" bid placed by one single BSP.

To avoid any tentative of market manipulation, Elia suggests to use the following floor/cap:

➢ floor = max(VoAA up, VoAA down)

➢ cap = min(VoAA down, VoAA up)

By taking the max (resp. min) of both VoAA, if one BSP tries to reduce the MIP (resp. increase the MDP) by offering a small upward aFRR bid at an artificially small price (resp. downward aFRR bid at a very high price), this manipulative behavior will have as consequence that:

- The MDP will be significantly lowered (resp. MIP will be significantly increased) which will be punitive in case the system is long (resp. short)

- The MIP (resp. MDP) won't be significantly affected since it will be set by the first downward (resp. upward) aFRR bid likely offered by another (more honest) BSP

➔ **Taking the max (resp. min) of both VoAA should discourage any market manipulation while it should have no effect otherwise (as VoAA up is normally expected to be > than VoAA Down)**

2 **Avoiding market manipulation– visual illustration**

Usual MOL

ID market price

VoAA up → Used as a floor for MIP

VoAA down → Used as a cap for MDP

ID market price

VoAA down

VoAA up

Used as a floor for MIP instead of VoAA up → the BSP who placed the dummy bid in the upward direction will not be able to set the MIP

Used as a cap for MDP → the BSP who tried to set the MIP at an advantageous value will instead set the MDP at an unfavourable value

ID market price

VoAA down

VoAA up

Used as a floor for MIP → the BSP who tried to set the MDP at an advantageous value will instead set the MIP at an unfavourable value

Used as a cap for MDP instead of VoAA down → the BSP who placed the dummy bid in the downward direction will not be able to set the MDP

A "dead band" is introduced to moderate the IP when BRPs correctly did their job and hence no strong implicit reaction is necessary
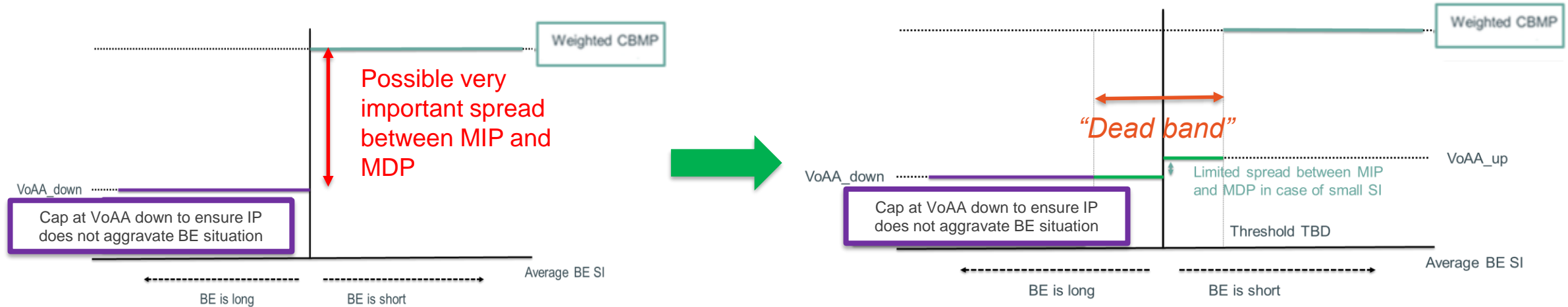
To moderate the IP when the Belgian system is close to be balanced, Elia suggests to introduce a "dead band" for which :

➢ MIP = **max**(VoAA up, VoAA down) ≈ **VoAA up**

➢ MDP = **min**(VoAA up, VoAA down) ≈ **VoAA down**

The spread between MIP and MDP is equal to the difference between VoAA up and VoAA down, which should be even more limited after evolution to PAC. We thereby ensure that BRPs are exposed to "neutral" price signals for small SI.

This dead band presents several advantages

According to Elia, this "dead band" presents several advantages :

➢ It ensures that the Imbalance Price is never very punitive when Belgian BRPs correctly made their job to balance the Belgian system;

> BRPs could otherwise be exposed to very high imbalance prices (up to 15k€) due to issues (e.g. forced outages, inappropriate market design, etc.) in other countries

➢ It stabilizes the price signal when the system is close to be balanced (the price signal could otherwise oscillate between a potentially extreme value and the Value of Avoided Activation depending on the direction of the average System Imbalance over the ISP, which, in case the system is close to be balanced, cannot be predicted before the end of the quarter-hour);

Quarter	Minute	SI (MW)	MIP (€/MWh)	MDP (€/MWh)	Price (€/MWh)
21:30 > 21:45	21:30	-1	3300	90	3300
21:15 > 21:30	21:29	0,1	3300	90	90
21:15 > 21:30	21:28	-0,5	3300	90	3300
21:15 > 21:30	21:27	2	3300	90	90
21:15 > 21:30	21:26	1,5	3300	90	90
21:15 > 21:30	21:25	-0,7	3300	90	3300

Large oscillations in the Imbalance Price due to the high spread between MIP and MDP, making the price signal and the 1' publication difficult to read

➢ It decreases the risk of important System Imbalance oscillations that could otherwise occur due to over-reaction of BRPs to potentially extreme price signals while the system is close to be balanced.

A careful approach is proposed to define the width of the dead band

Elia believes that the dead band width should be calibrated according to the following criteria:

➤ it should reflect the range of SIs for which significant implicit reactions from BRPs is not useful;

> Considering the current implicit reaction experienced in BE, this range is assessed as [-50;+50] MW

➤ SIs for which mFRR bids are usually activated (according to the activation strategy) should not belong to the dead band;

> Considering the current activation strategy, a [-50;+50] MW dead band is acceptable because Elia usually does not activate mFRR bids for SIs included in this range

However, such a large dead band was questioned by some market parties and it represents a large part (~30%) of the SIs in Belgium, according to the distribution of SIs in 2021:

Count of SI

Histogram SI 2021

35.00% | 30.00% | 25.00% | 20.00% | 15.00% | 10.00% | 5.00% | 0.00%

30.07% | 5.74% | 6.45% | 7.15% | 7.61% | 7.69% | 6.49% | 5.54% | 4.58% | 18.67%

<-100 or (blank) | -100–75 | -75–50 | -50–25 | -25-0 | 0-25 | 25-50 | 50-75 | 75-100 | >100

■ Total

SI
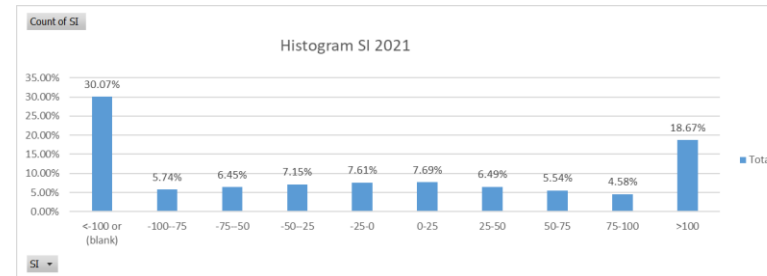
Elia is therefore willing to suggest following a careful and progressive approach and to start with a dead band width of 50 MW (i.e. SIs belonging to the [-25;+25] MW range), while foreseeing official evaluation moments.

These principles result in the following formulas for the calculation of the main component of the Imbalance Price

Determination of the MIP:

- max(VoAA up, VoAA down) when the BE average SI over the ISP belongs to the dead band

- max (max(VoAA up, VoAA down), $\dfrac{\sum_{OC\ j=qh}(abs(aFRR\ SD_{OC,j}) * CBMP_{OC,j})}{\sum_{OC_{j=qh}}(abs(aFRR\ SD_{OC,j}))}$, LMP, $_{pos,\ mFRR}$) when the BE average SI over the ISP is outside the dead band

Determination of the MDP:

- min(VoAA up, VoAA down) when the BE average SI over the ISP belongs to the dead band

- min (min(VoAA up, VoAA down), $\dfrac{\sum_{OC\ j=qh}(abs(aFRR\ SD_{OC,j}) * CBMP_{OC,j})}{\sum_{OC_{j=qh}}(abs(aFRR\ SD_{OC,j}))}$, LMP, $_{neg,\ mFRR}$) when the BE average SI over the ISP is outside the dead band

This new proposal is subject to monitoring and evaluation moments

The impact of the new approach for the determination of the marginal incremental and decremental prices is monitored and an evaluation moment is planned at the latest one year after the entry into force of the present rules (or earlier in case of sufficiently motivated request).

More specifically, the impact of the dead band on the components of the imbalance price could be assessed through (at least) the following indicators:

➢ An evaluation of the number of quarter-hours for which the SI belongs to the dead band

➢ A quantification of the impact of the dead band on the total imbalance revenues

➢ The impact of another dead band width (e.g. [-50;50] MW) could be assessed at the same time to evaluate the need/opportunity to adapt the width to this new range.
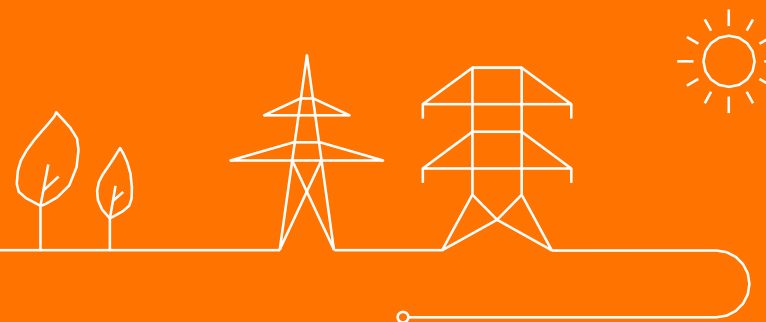
This assessment can lead to the revision of the balancing rules if deemed necessary.

Until 11:00

Implementation of CRI computation

Presented by Martin Funck

Implementation of the new CRI computation
Summary

- The new CRI computation has been validated by a parallel run from 27/11 to 28/02

- Given the parallel run results of the new CRI computation:

  - Results better in line with real-time situation ➔ added value for **Grid Security**

  - Less high and medium CRI than Red zones ➔ added value for **Market Parties (additional flexibility)**

  ➔ **No reason to wait till iCAROS phase 1 go-live, let's use the new CRI computation on daily basis as soon as possible to define the current Red Zones.**

- Regulated document ("Coordination Rules): No need to update as the Red Zone methodology is (briefly) explained and in line with the new CRI computation.

➔ Target Go-live of CRI computation: September 2022

Congestion Risk Indicator (CRI) – results from 27/11 to 28/02 – downward direction

Parallel Run Results
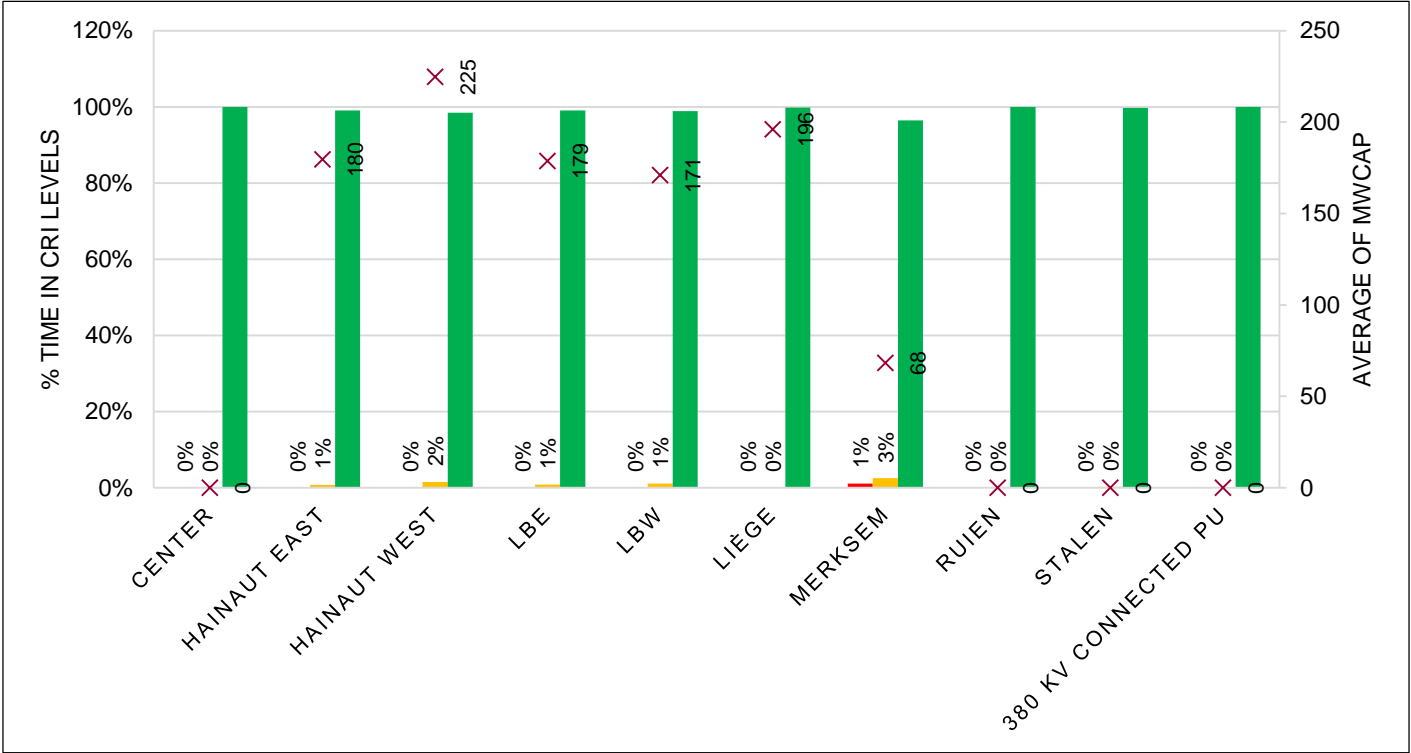
Comparison btw Parallel Run Results (CRI) and Red-Zones

Electrical Zone	CRI (//run)		Red Zones (Production)	
	High	Medium	Red	With MWCap
Center	0%	0%	0%	0%
Hainaut East	0%	1%	0%	0%
Hainaut West	0%	2%	0%	0%
LBE	0%	1%	6%	8%
LBW	0%	1%	7%	1%
Liège	0%	0%	0%	0%
Merksem	1%	3%	0%	0%
Ruien	0%	0%	0%	0%
Stalen	0%	0%	0%	0%
380kV	0%	0%	0%	0%

Thanks to the new computation, a better granularity (specifically for each hour) and its systematic updates (3x/day), there are less CRI high than Red Zones
➔ **Added value for Market Parties (additional flexibility)**

Congestion Risk Indicator (CRI) – Results from 27/11 to 28/02 – upward direction

Parallel Run Results
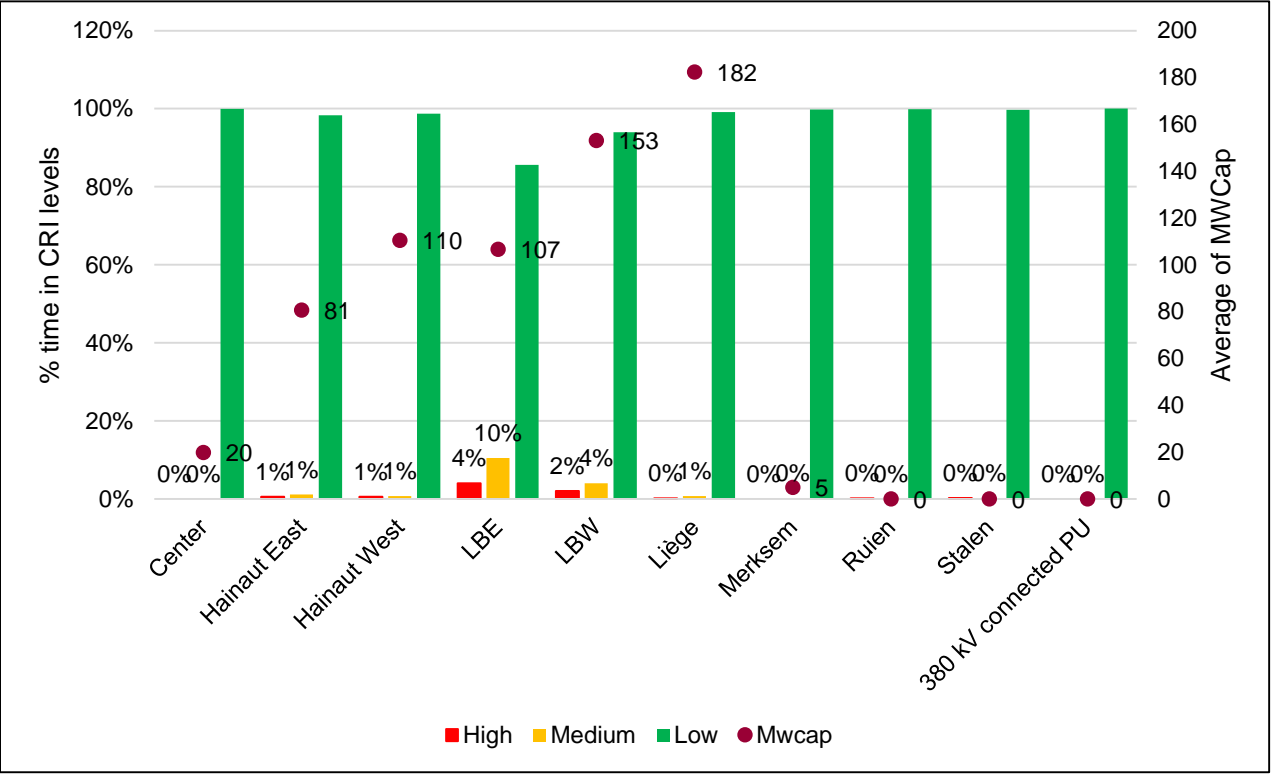
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	High	**Medium**	**Red**	**With MWCap**
Center	0%	0%	0%	0%
Hainaut East	1%	1%	0%	0%
Hainaut West	1%	1%	0%	0%
LBE	4%	10%	6%	8%
LBW	2%	4%	7%	1%
Liège	0%	1%	0%	0%
Merksem	0%	0%	0%	0%
Ruien	0%	0%	0%	0%
Stalen	0%	0%	0%	0%
380kV	0%	0%	0%	0%

When high/medium CRI were defined, analysis showed that it represented the real grid situation.
➔ **Added value for the grid security**.

Current version of the Coordination Rules

__Art. 17.2__ Red Zones determined by Elia are based on a check to see whether or not Daily Schedules for day D received after the closure of the Day-ahead Market or deviations of the Daily Schedules on day D could cause Congestions. In case a deviation, in a specific direction (upwards or downwards), would cause Congestions on relevant network elements, Elia will declare the concerned Electrical Zone as a Red Zone in the concerned direction.

__Art. 17.1__ After the coordinated security analysis for day D performed at day D-1 Elia determines Red Zones. Elia shall update the Red Zones during day D when new relevant information is available

➔ **No need to update the Coordination Rules to use the new CRI computation**

In practice

	AS IS situation	Post CRI computation go-live (September 2022)	Post mFRR & iCAROS go-live
Determination of indicator	• Once in D-1, ad-hoc in ID	• Level determined at 10pm in D-1 & updated 3 times in ID • Based on a structural methodology and quantitative yearly process	
Impact of the indicator	Use to: • Prevent change of schedules • Set a limit on bids activation (BFU strong filter – mFRR/aFRR operator decisions – Risk Manangement)		Use to: • Set a limit on aFRR/mFRR bids & Limit impl. balancing activations • Freedom of dispatch: No impact on schedules

DARE dimensioning results for 2021

Presented by Didier Chim
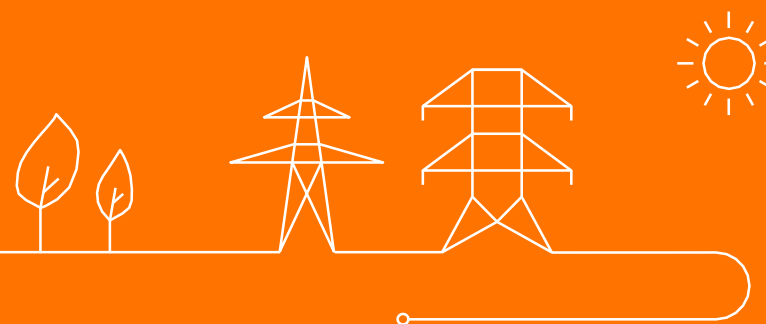
RECAP - Dynamic dimensioning methodology

- FRR reserve capacity is determined based on a <u>probabilistic methodology</u> in line with Article 157(2)b of the SOGL covering 99.0% of the LFC block imbalance risks

- It takes into account two <u>deterministic thresholds</u> :

  - Always larger than the dimensioning incident in line with Article 157(2)e and Article 157(2)f

  - Always covering 99.0% of historic LFC block imbalances in line with Article 157(2)h and Article 157(2)i

- The methodology is specified in the LFC block operational agreement and its explanatory note (*link*)
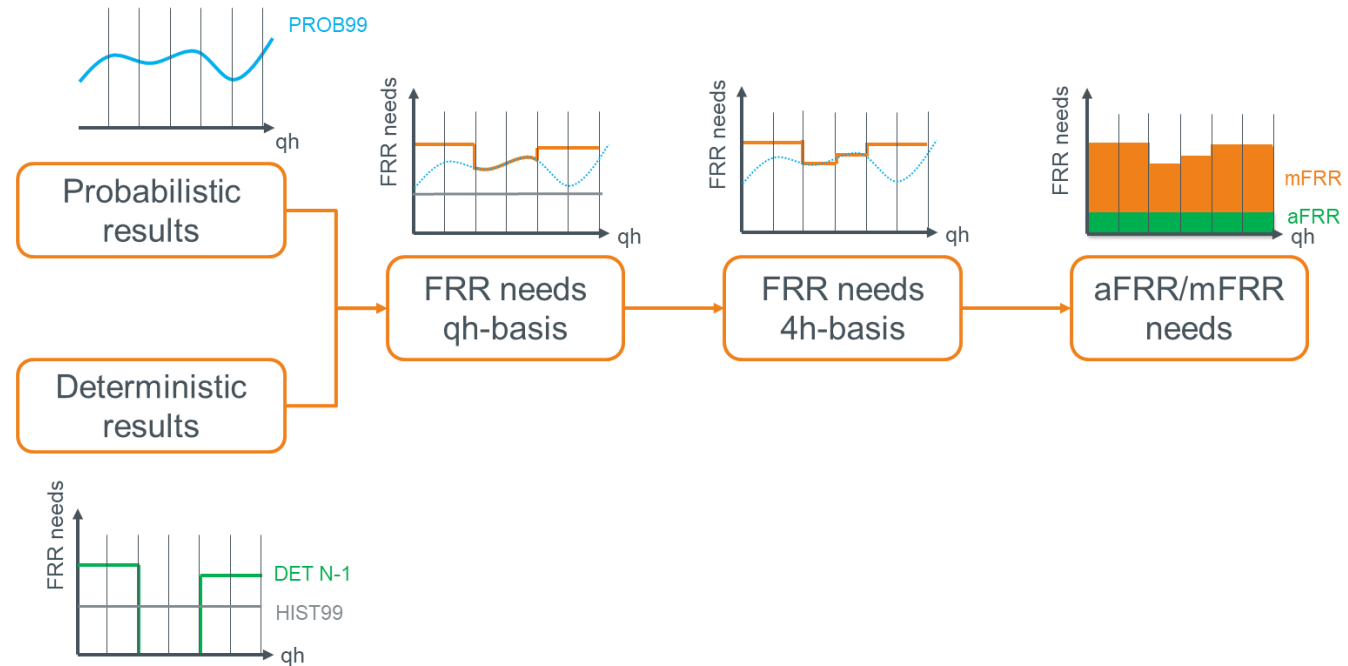
The required positive and negative reserve capacity on FRR is calculated by Elia each day before 7 AM for every period of 4 hours of the next day

Available information

➢ **Daily <u>publication</u> of the results (before 7 AM D-1**): final FRR needs and mFRR balancing capacity (to be procured)

➢ **<u>Yearly</u> analysis of the FRR needs and means :** assess whether the positive and negative FRR needs have been sufficiently covered by the resources available.

    ➢ In line with regulatory framework : Article 6 of the LFC Means ([link](#))

    ➢ Results of the analysis presented in the Working Group Balancing (cfr. next slides)

Article 6 of the LFC Means "Elia will carry out a yearly ex-post analysis in the first quarter of each year based on historical data from the precedent year on and assess whether the positive and negative FRR needs have been sufficiently covered by the resources available. For the purposes of this analysis, Elia will compare the results of the positive and negative FRR needs based on the methodology in the LFCBOA and compare this with the available resources of aFRR (contracted aFRR balancing capacity) and mFRR (non-contracted balancing energy offers and sharing of FRR reserves)."

FRR needs 1-2-2021 – 31-01-2022

Results for upward dimensioning continue to be set by the dimensioning incident.
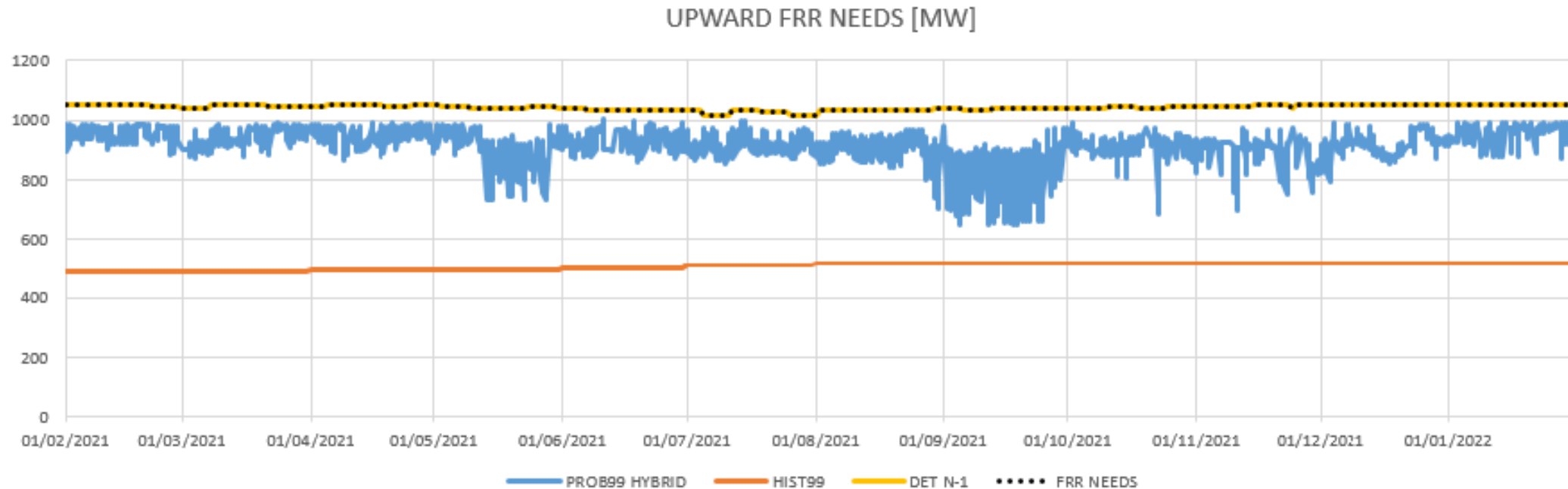
UPWARD FRR NEEDS [MW]

The variations of the probabilistic result (PROB99) of the upward FRR needs remained relatively stable for the studied period, except for a couple of weeks in **May** and the month of **September** (respectively due to the **planned outage of Tihange 2 and Doel 3**).

FRR needs 1-2-2021 – 31-01-2022

FRR needs are most of the time set by the dimensioning incident (DET N-1).
FRR needs are substantially reduced to the PROB99 or HIST99 when Nemo Link is predicted in import (or scheduled in maintenance between 21-24 September 2021).

DOWNWARD FRR NEEDS [MW]
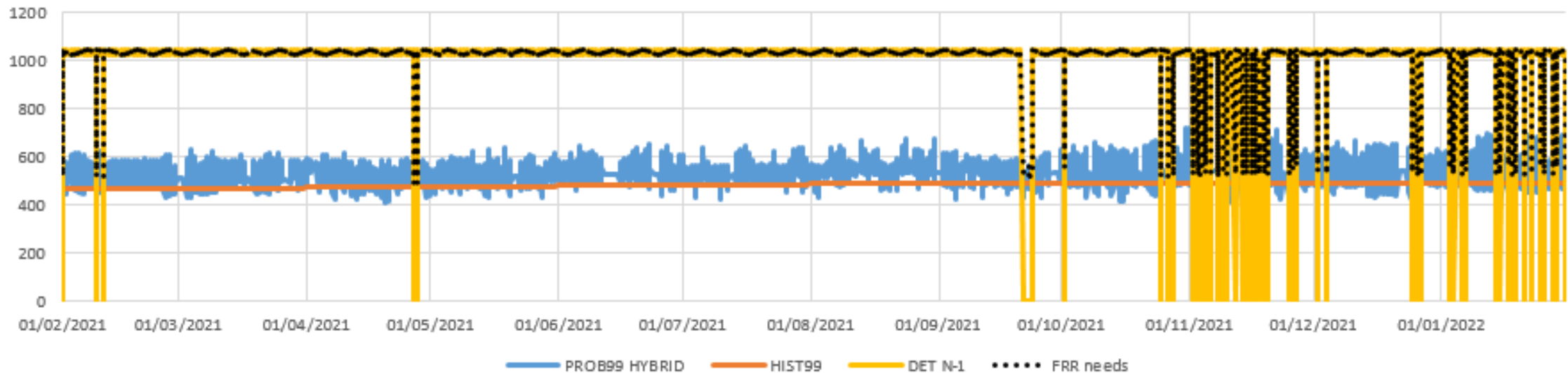
Nemo Link forecast : 1-2-2021 – 31-01-2022

The day-ahead forecast of the Nemo Link flow direction was able to provide a forecast of the direction in 84.0% of the time.
Over these periods, the method predicted an import or export flow direction correctly during 87.6% of the time.
The forecast remains relatively inaccurate when importing cases of Nemo Link occur (due to decreasing GB-BE spread).
Elia has implemented the Nemo Flow Forecast as of 1st April 2022 to improve the quality of the forecasts.

Month	Forecast accuracy [%]					
	Export forecast – export flow	Export forecast – import flow	Import forecast – import flow	Import forecast export flow	Undecided forecast	wrongful
Feb-21	57,5%	1,4%	0,1%	5,7%	35,2%	7,2%
Mar-21	73,9%	1,1%	0,3%	1,2%	23,6%	2,3%
Apr-21	68,6%	0,7%	0,3%	5,6%	24,9%	6,3%
May-21	82,1%	0,1%	0,0%	3,6%	14,1%	3,8%
Jun-21	73,3%	0,0%	0,1%	0,8%	25,7%	0,8%
Jul-21	89,5%	0,3%	0,0%	0,3%	9,9%	0,5%
Aug-21	98,9%	0,0%	0,0%	0,0%	1,1%	0,0%
Sep-21	86,0%	1,4%	0,0%	0,3%	12,4%	1,7%
Oct-21	80,1%	2,6%	1,6%	8,3%	7,4%	10,9%
Nov-21	36,9%	3,2%	12,6%	30,6%	16,7%	33,8%
Dec-21	77,4%	7,3%	1,9%	9,8%	3,6%	17,1%
Jan-22	39,0%	6,9%	3,1%	33,6%	17,5%	40,5%
Total	71,9%	2,1%	1,7%	8,3%	16,0%	10,4%

FRR means 1-2-2021 – 31-01-2022

In line with the analyses made in the framework of the LFC Means, coverage downward needs has slightly decreased since last year and were covered up to the reliability level of 97.7%. This is explained by low flexibility on pumped-hydro (pumps) and remaining cross-border ATC after intra-day for mFRR sharing capacity or a combination of both.
The conclusion remains that the procurement of downward balancing capacity cannot be justified at this stage.

DOWNWARD RESERVE MEANS [MW]
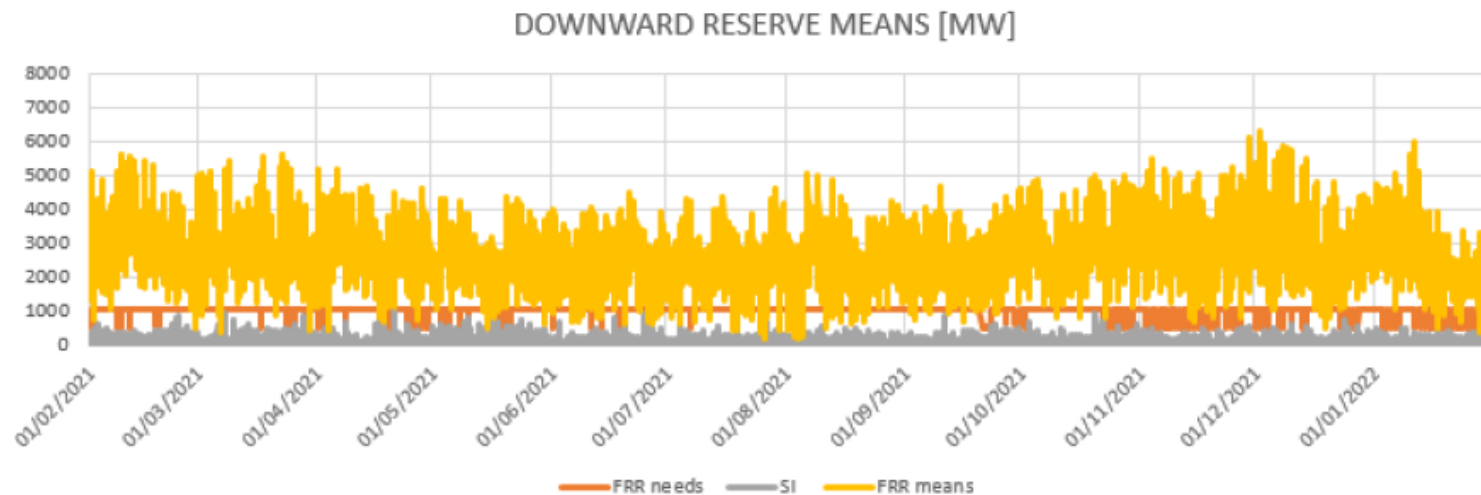
Article 6(7) of the LFC Means specifies that *"Elia will not procure any mFRR balancing capacity since the required negative reserve capacity for mFRR is expected to be covered by available reserve sharing and available non-contracted balancing energy bids as specified in Article 3 with an acceptable probability."*

Year overview: Balancing Services Statistics 2021

Presented by Amandine Leroux

Balancing Capacity

Statistics 2021

FCR Capacity Auctions – Volume repartition

Evolution Sourcing FCR 2021

Legend: FCR Regelleistung | FCR Belgium | Limit of XB Sourcing
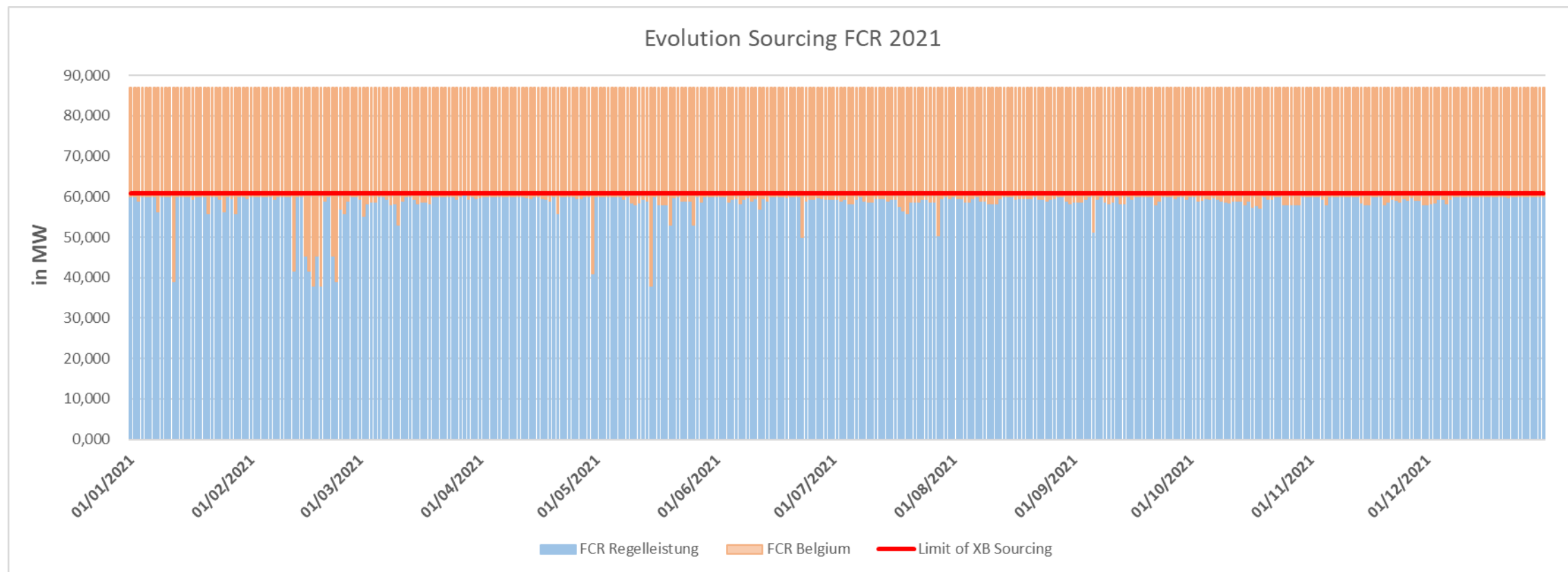
FCR Capacity in 2021 is mainly procured :

➢ Cross-border

➢ From DP$_{PG}$ for the core share (BE part)

Year	FCR to procure (BE)	Core share (BE)
2020	78 MW	24 MW
2021	87 MW	27 MW

FCR Capacity Prices

Evolution of Daily Average FCR Capacity Price

FCR 2020 Updated contract

802 €/MW/h BE core share

263 €/MW/h X-border marginal price
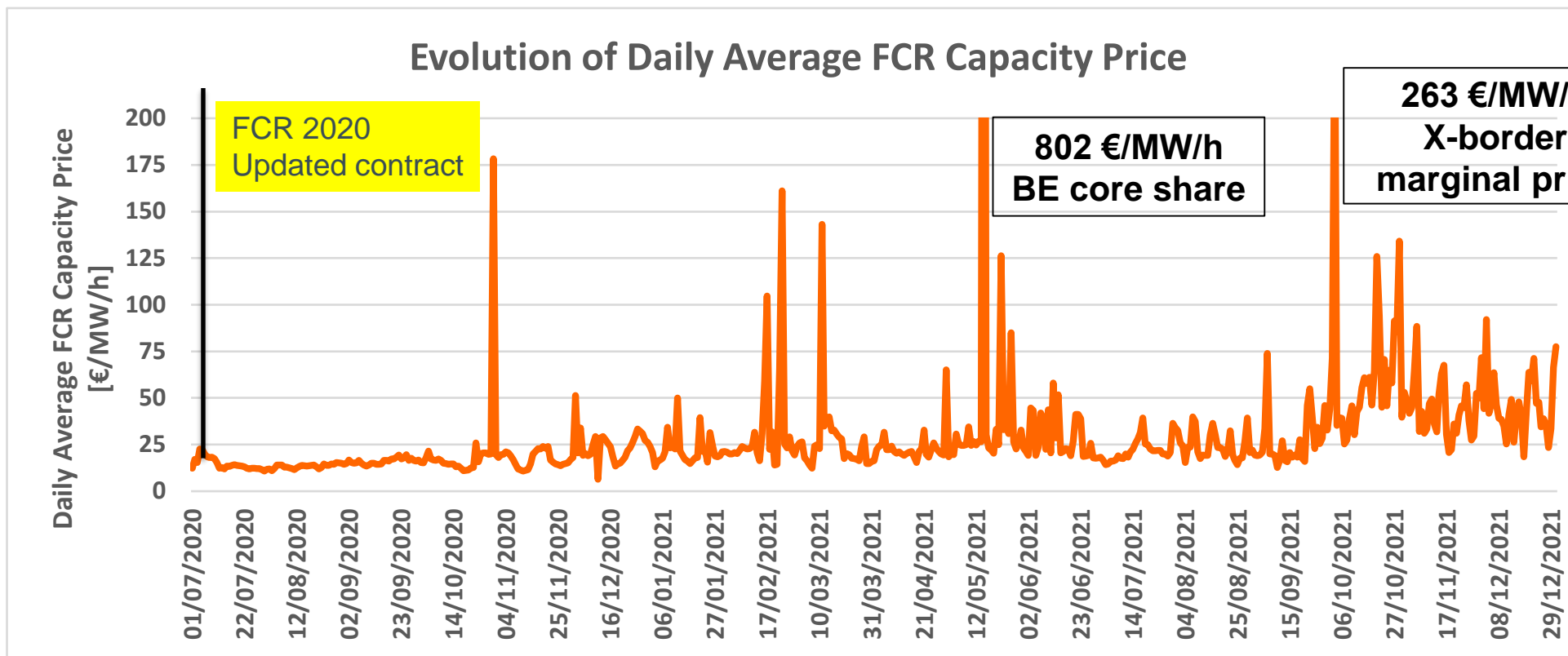
Year	FCR to procure (BE)	Core share (BE)
2020	78 MW	24 MW
2021	87 MW	27 MW

- ➢ FCR capacity prices **remain under control**: FCR, mainly provided by batteries and X-border capacity (Regelleistung) proved to resist to market conditions

- ➢ As of January 2021, some BSPs optimize their capacity bids between FCR & aFRR. This has led to an increase of procurement cost at the end of the year (increase of gas prices).

- ➢ Average FCR X-border capacity price for 2021: **18 €/MW/h**

- ➢ Average FCR BE capacity price for 2021: **31,72 €/MW/h**

*Added information

FCR Capacity Prices – Evolution since Jan 2020

Monthly FCR prices evolution
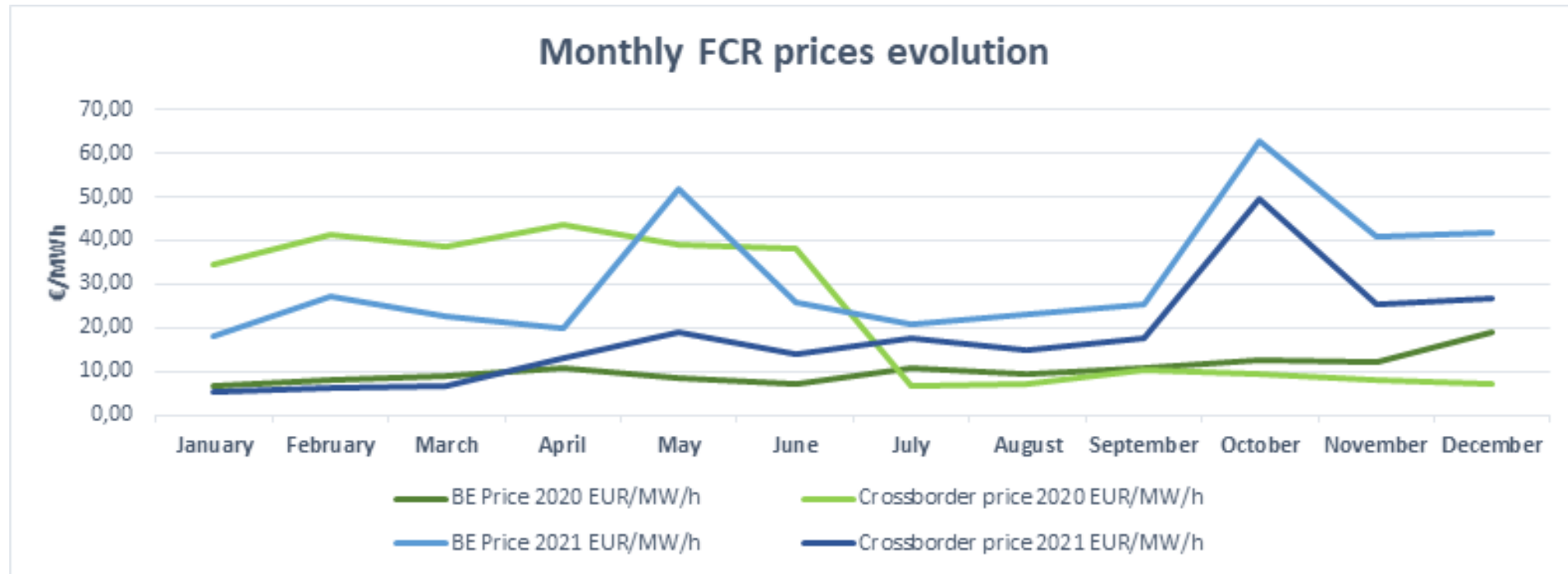
FCR Availability Control – Capacity Tests

➢ Requested FCR has to be supplied during 2 minutes in both directions

➢ Missing MW is penalized in proportion of monthly remuneration, depending on % of failure and quality of historical tests delivery
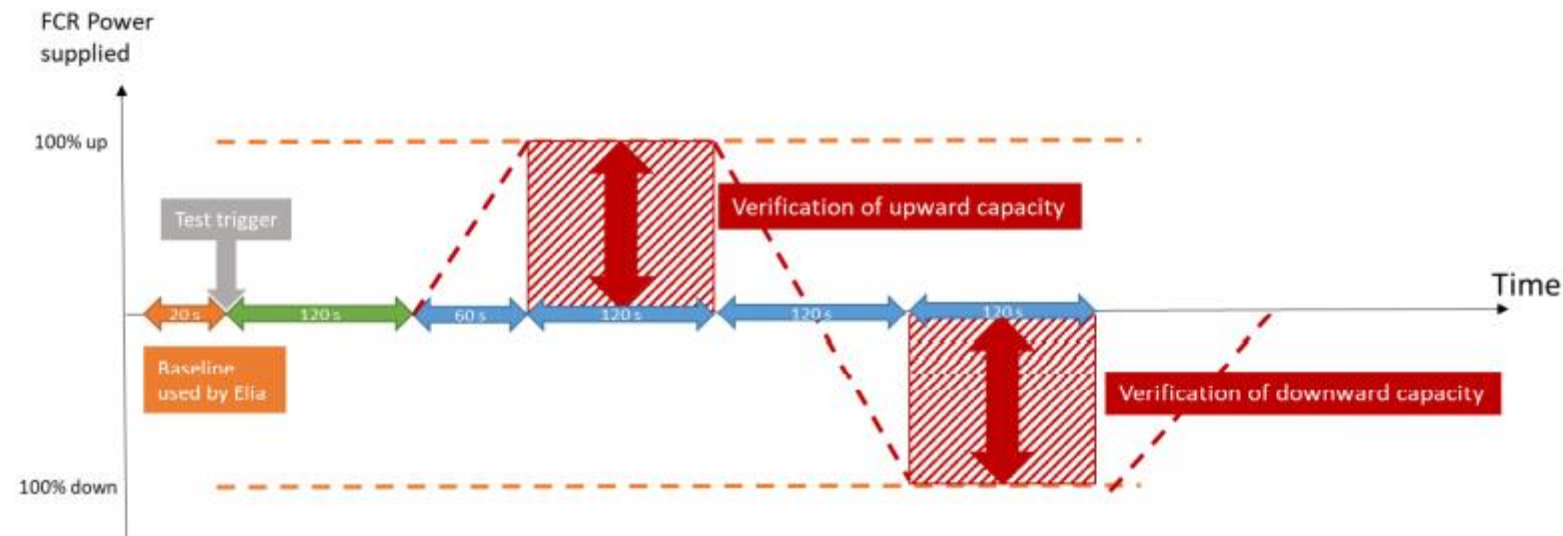
Situation Dec 21:
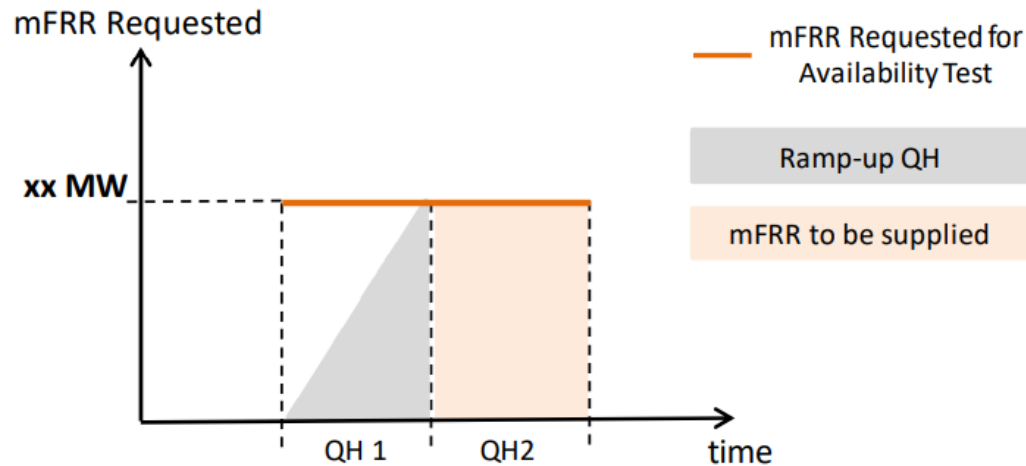
11 tests / 3 BSPs

➢ 6 successful

➢ 2 lightly failed (less than 30%)

➢ 3 failed

FCR Availability Control – Energy Tests

➢ Requested FCR has to be supplied during 25 minutes

➢ Missing Time is penalized in proportion of monthly remuneration, depending on % of failure and quality of historical tests delivery

Situation Dec 21:

3 parks of batteries tested

➢ 2 tests successful

➢ 1 test failed

aFRR Capacity Prices

aFRR Capacity Prices (EUR/MW/h)

644,9 €/MW/h

aFRR 2020 Updated contract

Avg Daily Prices Down — Avg Daily Prices Up
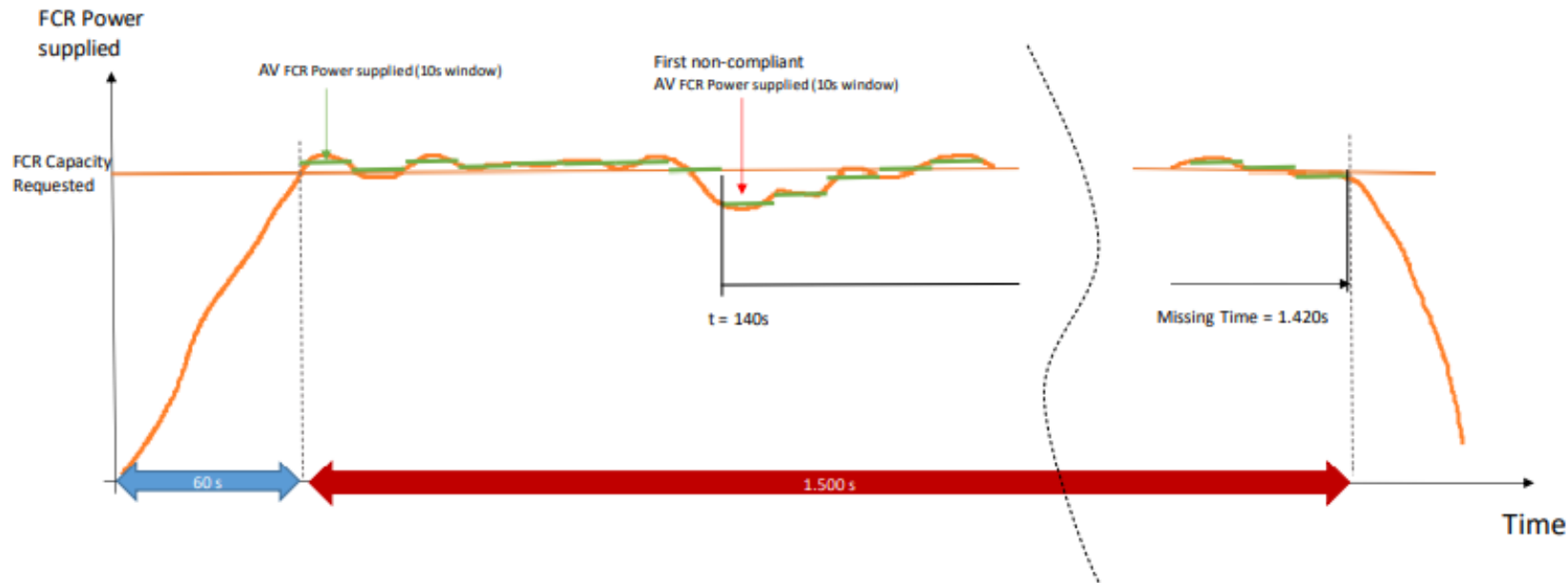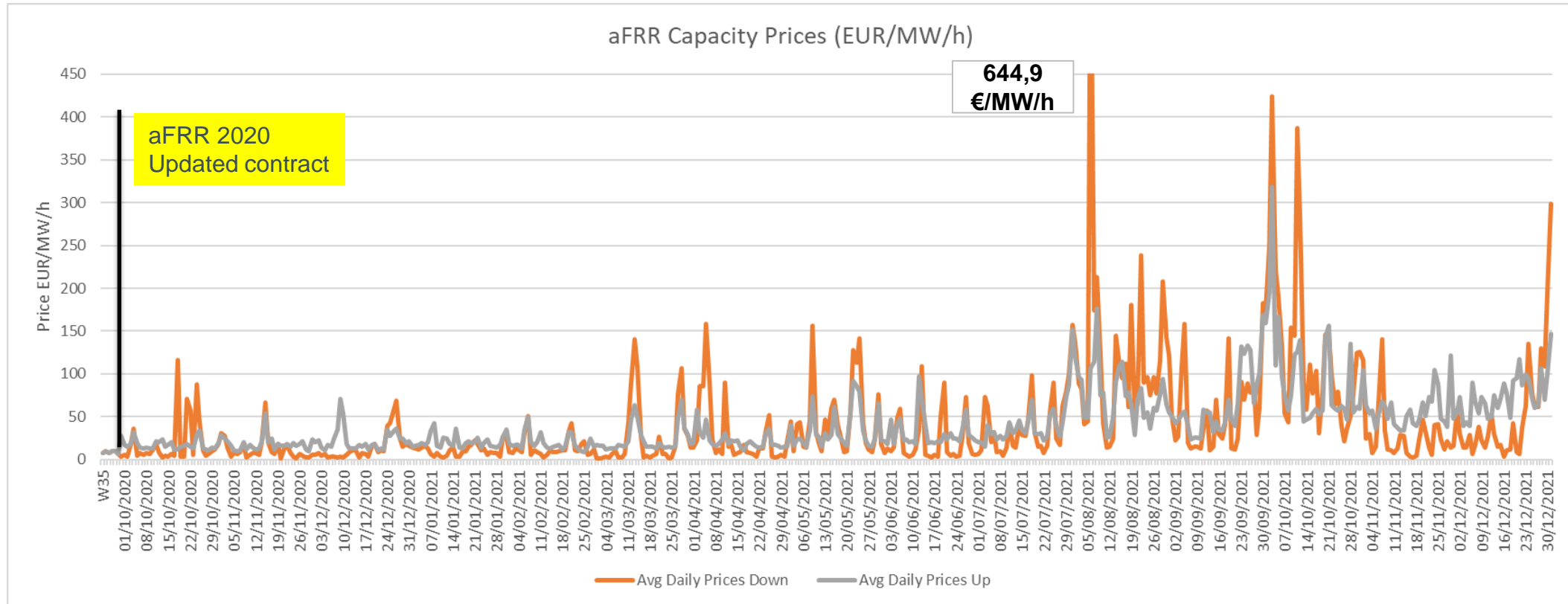
➢ Peaks in aFRR capacity prices are caused by various situations
➢ Main reason remains correlation with the CSS (important part of aFRR capacity still provided by gas units)

aFRR Capacity Prices

aFRR Capacity Prices (EUR/MW/h)

644,9

aFRR 2020
Updated contract

Expensive must-run
Peaks in aFRR Down prices

Positive CSS
Gas units in the money

— Avg Daily Prices Down   — Avg Daily Prices Up
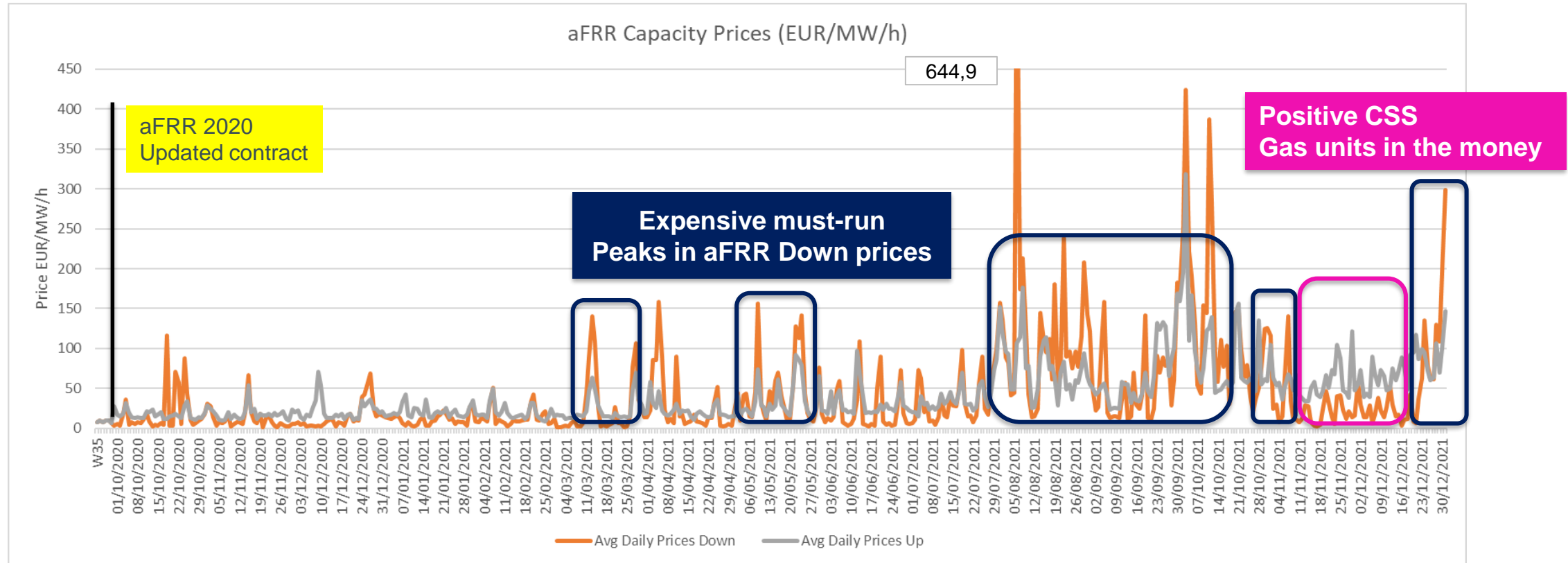
➤ High aFRR Down capacity prices driven by must-run costs (negative CSS)
➤ Negative CSS 70% of the time during 2021

aFRR Capacity Prices

aFRR Capacity Prices (EUR/MW/h)

- aFRR 2020 Updated contract
- Per-CCTU auctions Peaks in aFRR Down prices
- 644,9
- 25/10/2021 CAV = -4 MW

Legend: — Avg Daily Prices Down — Avg Daily Prices Up
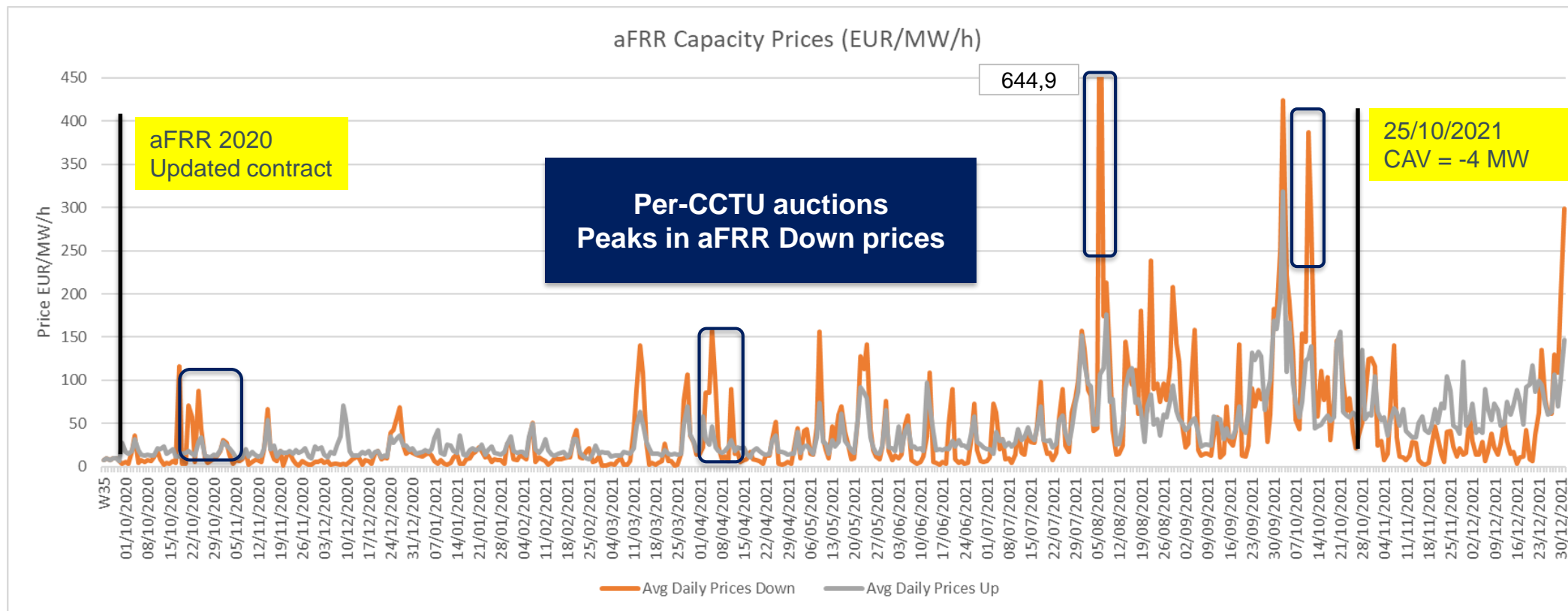
➤ Unavailability of aFRR capacity provided by DPpg in Per-CCTU (4-hour block) auctions

➡ Selection of aFRR capacity provided by gas units in the Per-CCTU auctions

(= worst case as must-run costs are covered by a few MW)

aFRR Capacity Prices
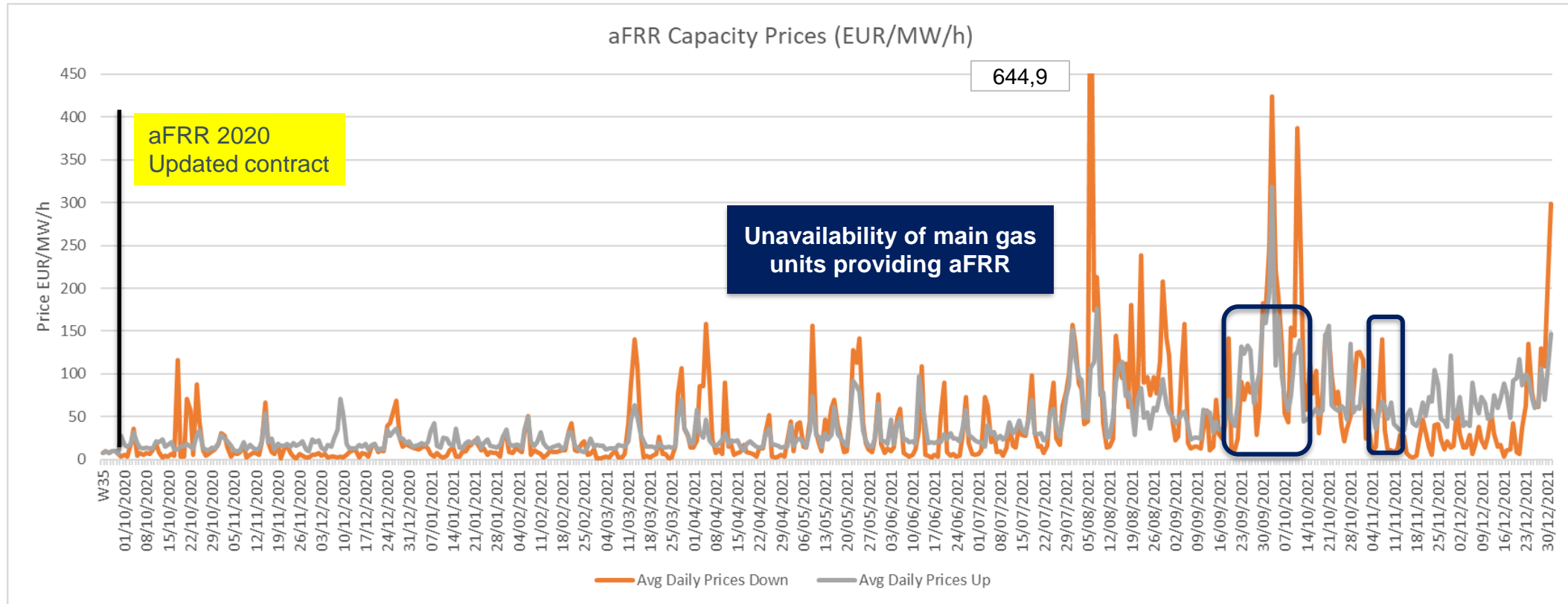
- Unavailabily of main gas units providing aFRR capacity
- aFRR capacity provided by more expensive delivery points

Monthly aFRR prices evolution

mFRR capacity prices

mFRR Capacity Prices and Volumes

07/01/2021 – mFRR capacity to procure decreased by 200MW (increase of reserve sharing contribution from 50MW to 250MW)
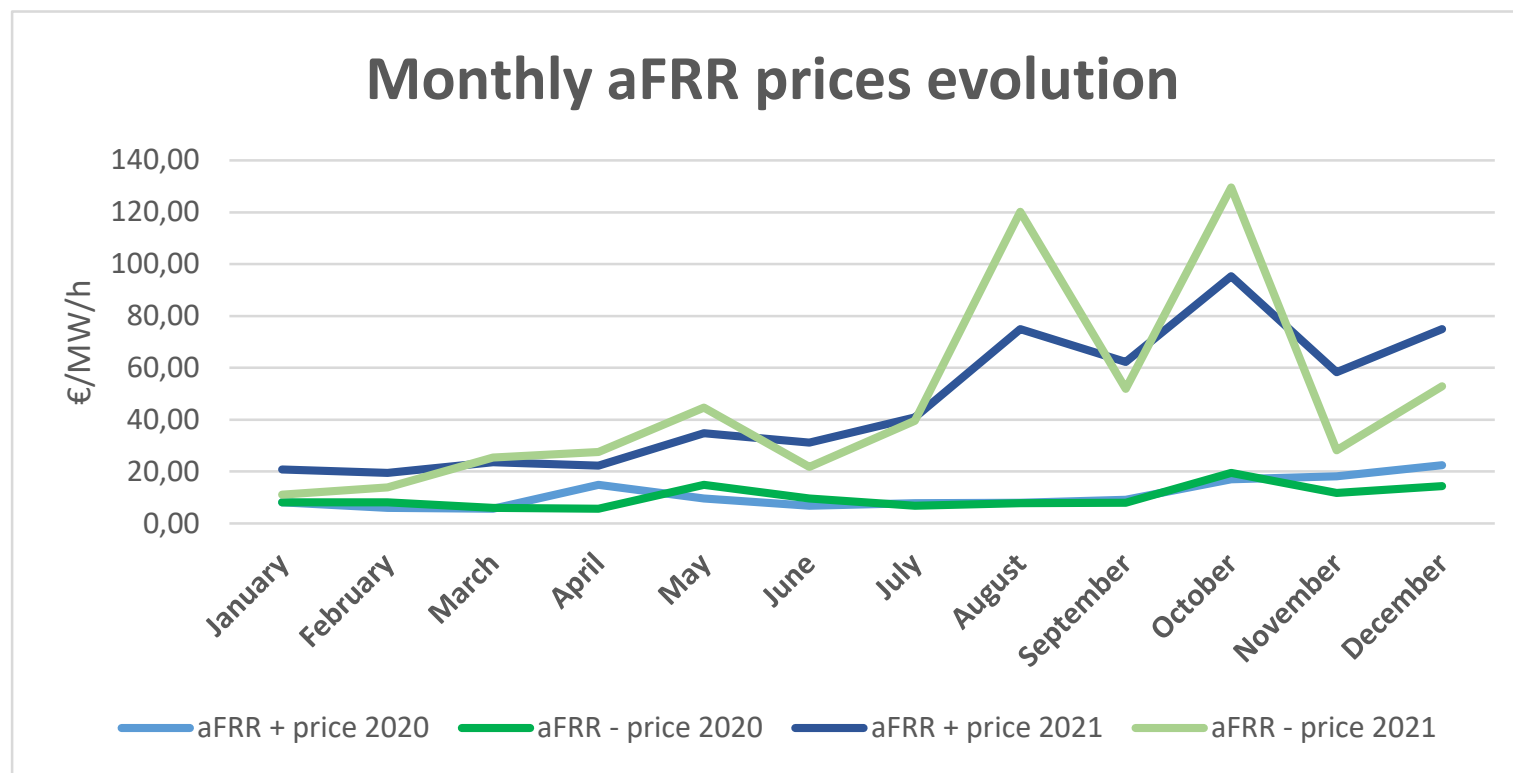
Avg Daily Volumes — mFRR Avg Daily Prices
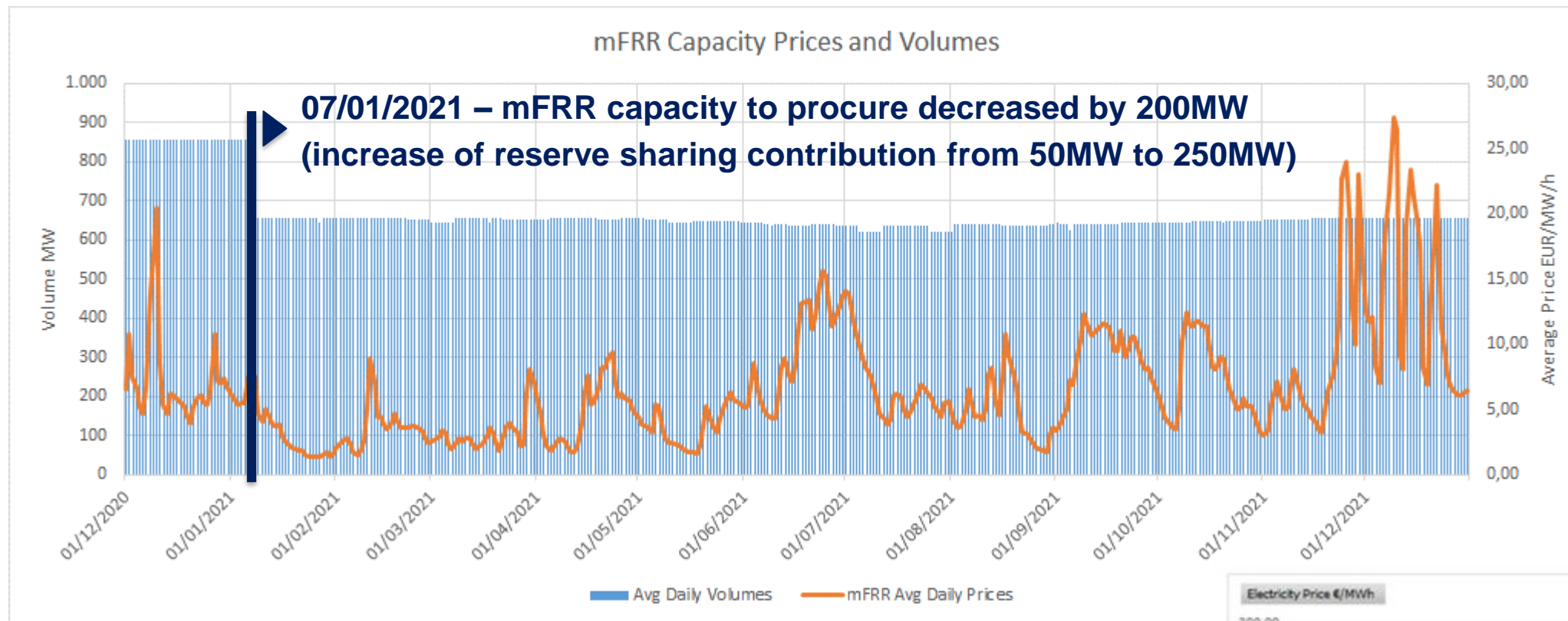
High mFRR capacity prices observed in December 2021

Monthly mFRR prices evolution
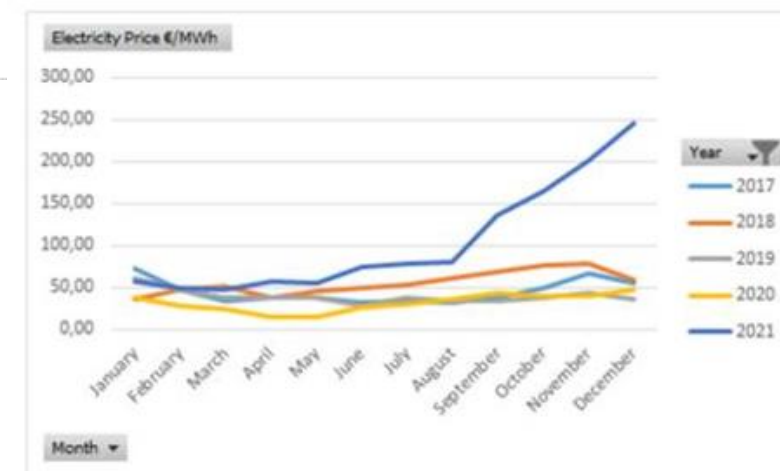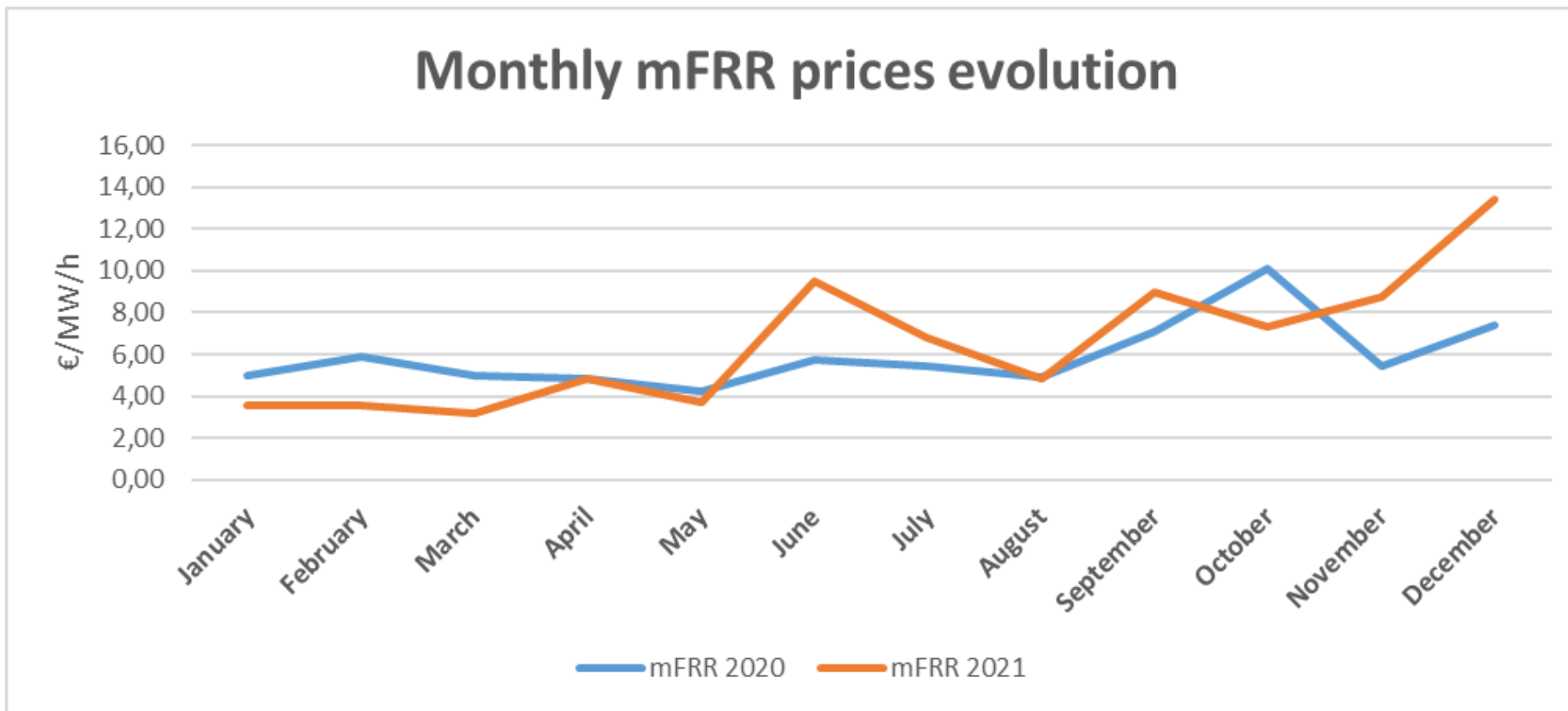
mFRR Availability Control – Capacity Tests

➤ Min 1 and max 12 tests per year (max can decrease to 6 if success)

➤ Test duration of two quarter hours and requested volume to be supplied during the second quarter hour

➤ Missing MW is penalized in proportion of monthly remuneration, depending on % of failure and quality of historical tests delivery

Situation Dec 21

23 tests / 8 BSPs

➤ 16 successful

➤ 5 lightly failed (less than 30 %)

➤ 2 failed

➤ Failed tests spread over 5 BSPs

Figure 1 – Availability test pattern

Transfer of Energy

Statistics 2021

ToE statistics - mFRR DP$_{PG}$

Situation December 2021:

➢ Number of BSPs: **12**

➢ Number of Suppliers: **22**

➢ Sum of mFRR$_{max}$ (corresponding to DP$_{PG}$)

	mFRR Standard & Flex	mFRR Flex only
Dec 2020	476 MW	71 MW
Dec 2021	528 MW	35 MW

	ToE		Opt-Out		Pass Through		Total	
	2020	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**
# Delivery Points	87	30	169	231	8	6	264	267
Sum DP$_{mFRR,Max,Up}$ (MW)	442	255	773	1020	248	205	1463	1480,7
% Sum DP$_{mFRR,Max,Up}$	30 %	**17 %**	53 %	**69 %**	17 %	**14 %**	100 %	100 %

In 2021, major switch of DPs from ToE Regime to Opt-Out Regime to allow participation in both balancing services (aFRR and mFRR)

Balancing Energy

Statistics 2021

mFRR Standard / mFRR Flex Energy Bids

Prix des offres mFRR standard

Legend: mFRR std Min — mFRR std Max — mFRR std Moy

Prix des offres mFRR flex

Legend: mFRR flex Min — mFRR flex Max — mFRR flex Moy
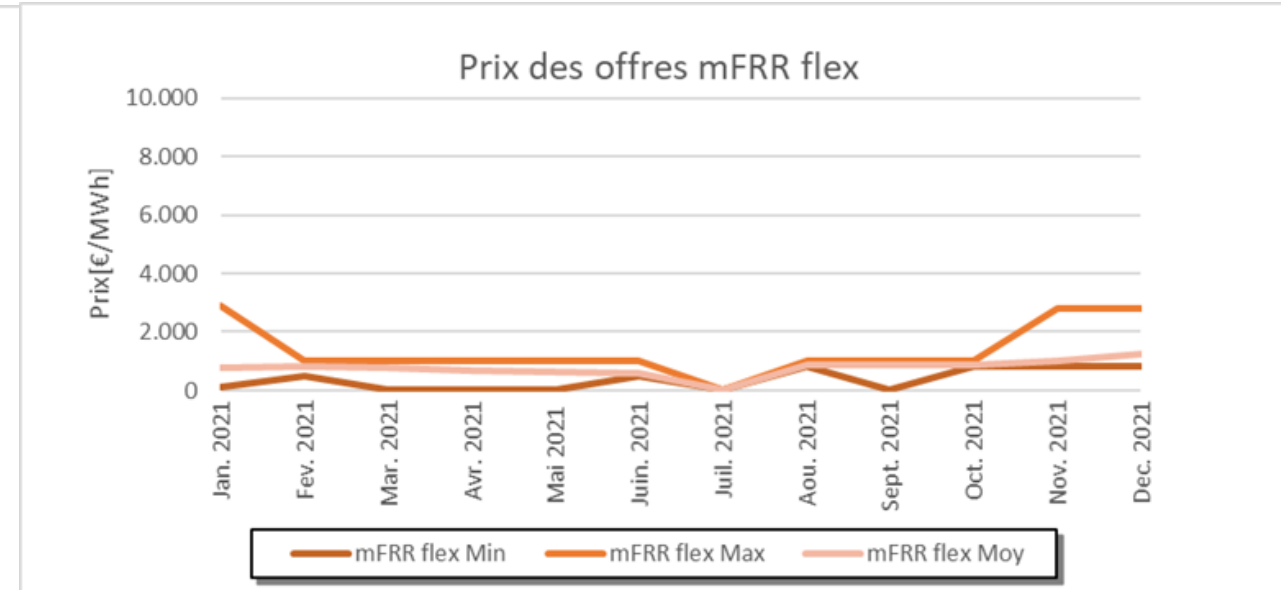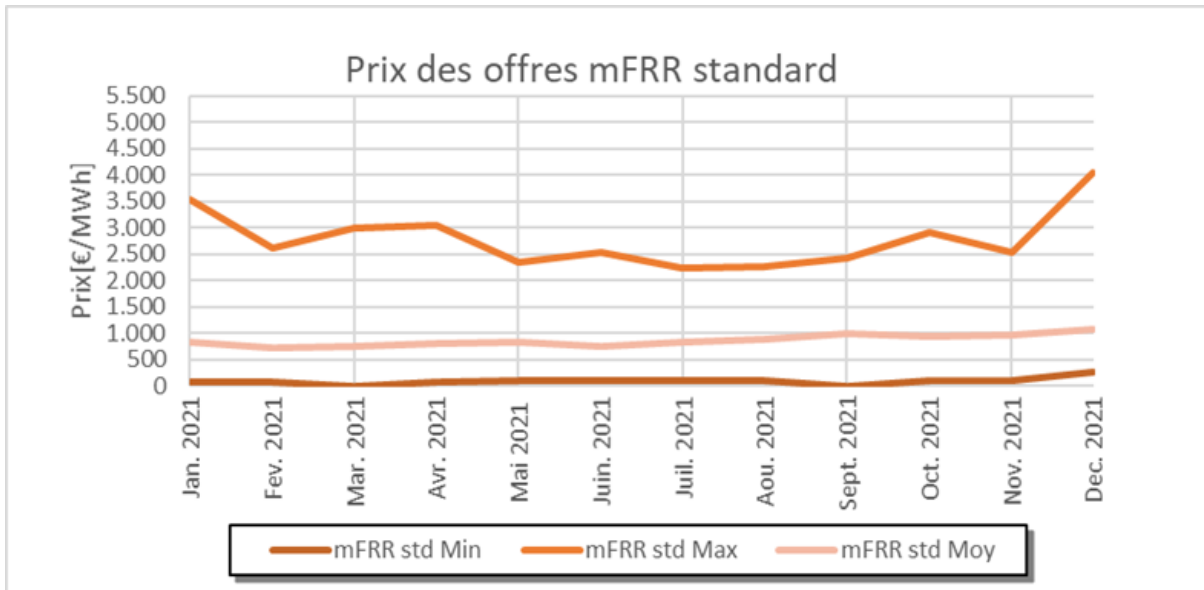
mFRR Standard	Min (€/MWh)	Max (€/MWh)	Average (€/MWh)
2020	72	5.000	675
2021	70	4.038	868

mFRR Flex	Min (€/MWh)	Max (€/MWh)	Average (€/MWh)
2020	70	3.355	596
2021	121	2.880	719

➢ **Prices of mFRR energy bids (STD & Flex) stay in similar range with regards to 2020**

➢ **Small increase of average price for both mFRR STD and mFRR Flex**

Non-Contracted mFRR Energy Bids DP$_{PG}$

No offers in 2021

No energy bids mFRR NC submitted in 2021 from delivery points DP$_{PG}$

Balancing Energy – Percentage of each balancing energy
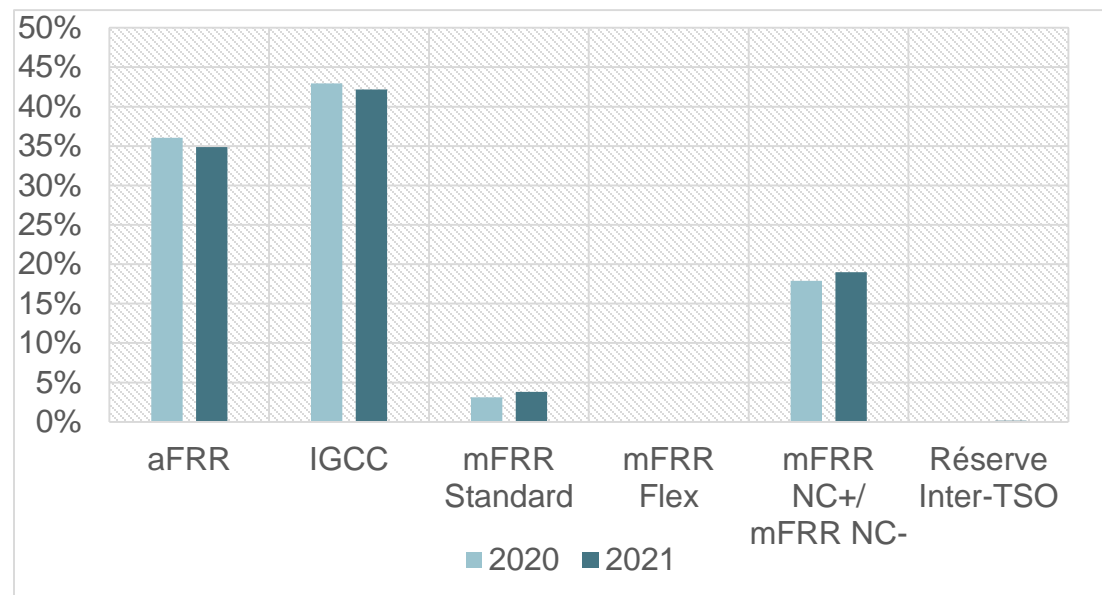
Total balancing energy activated in MWh	
2020	**2021**
1 140 812	1 209 948

Total balancing energy activated is slightly higher than previous year

Balancing Energy – automatic activation
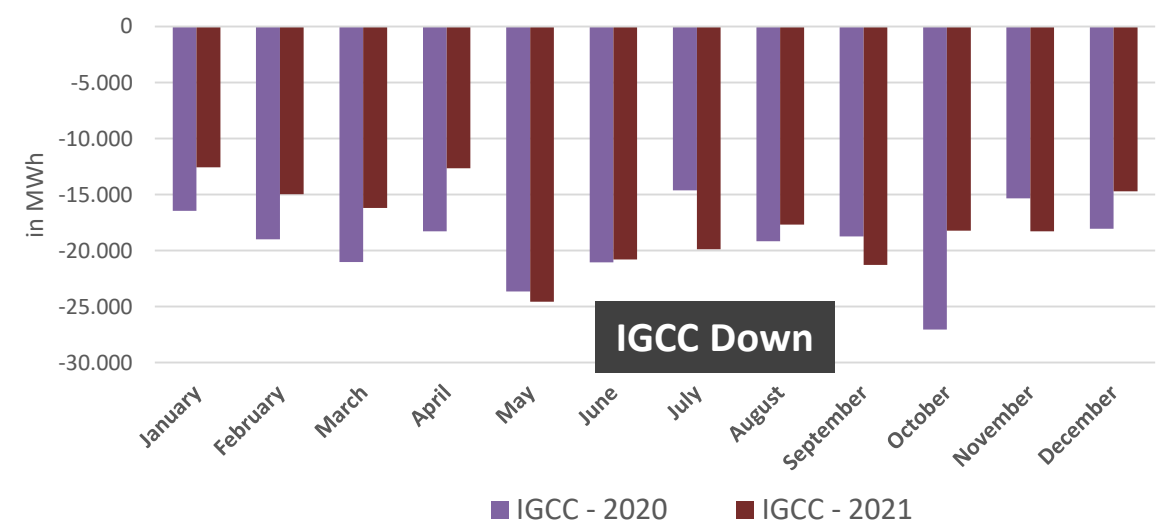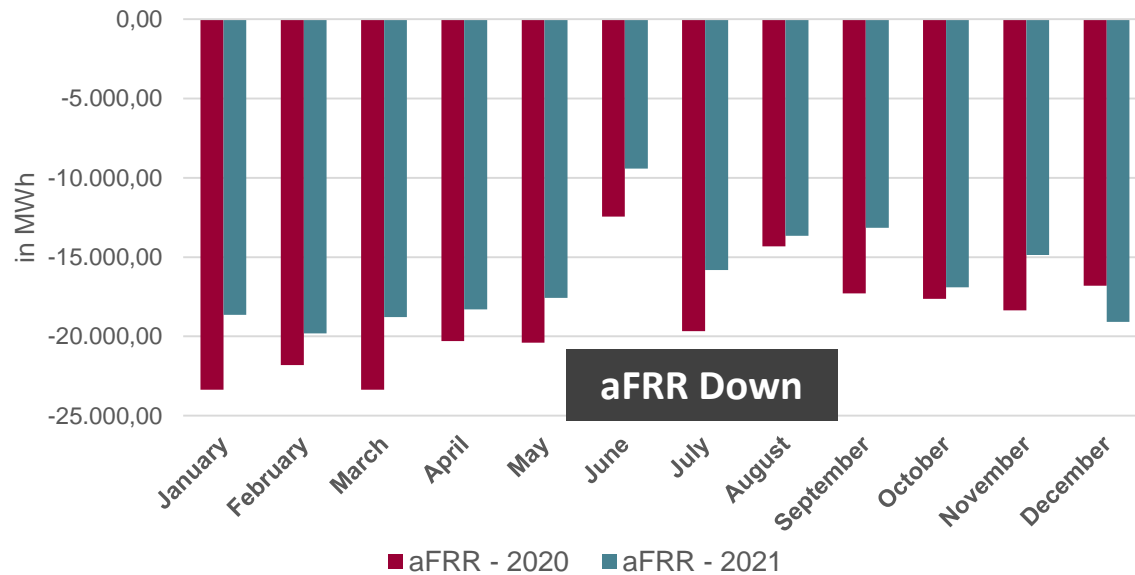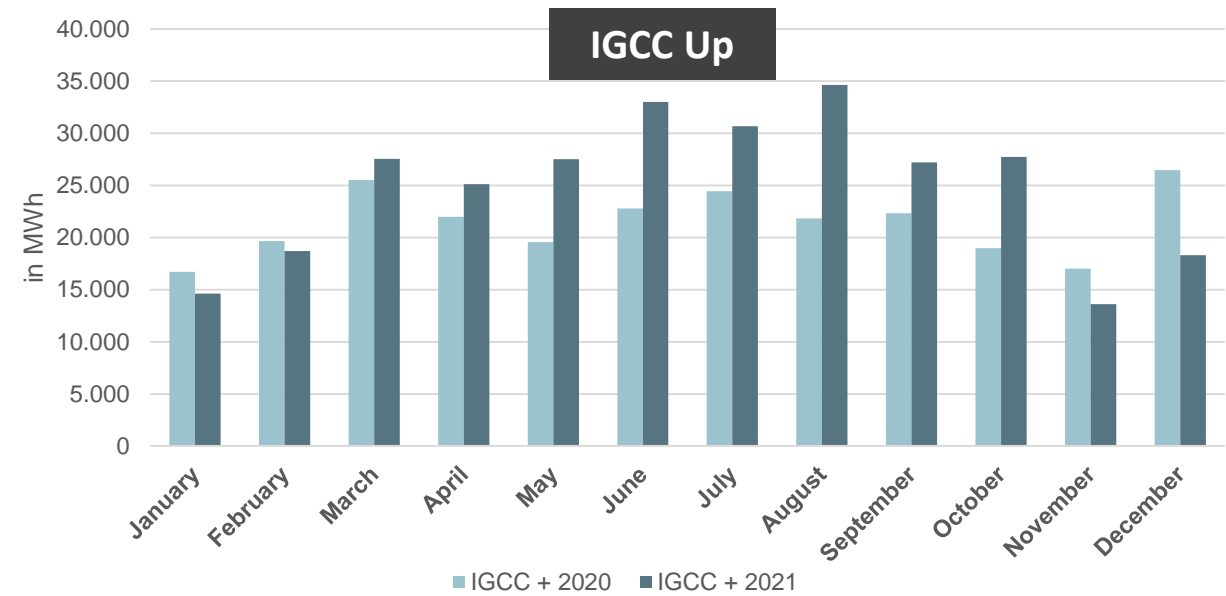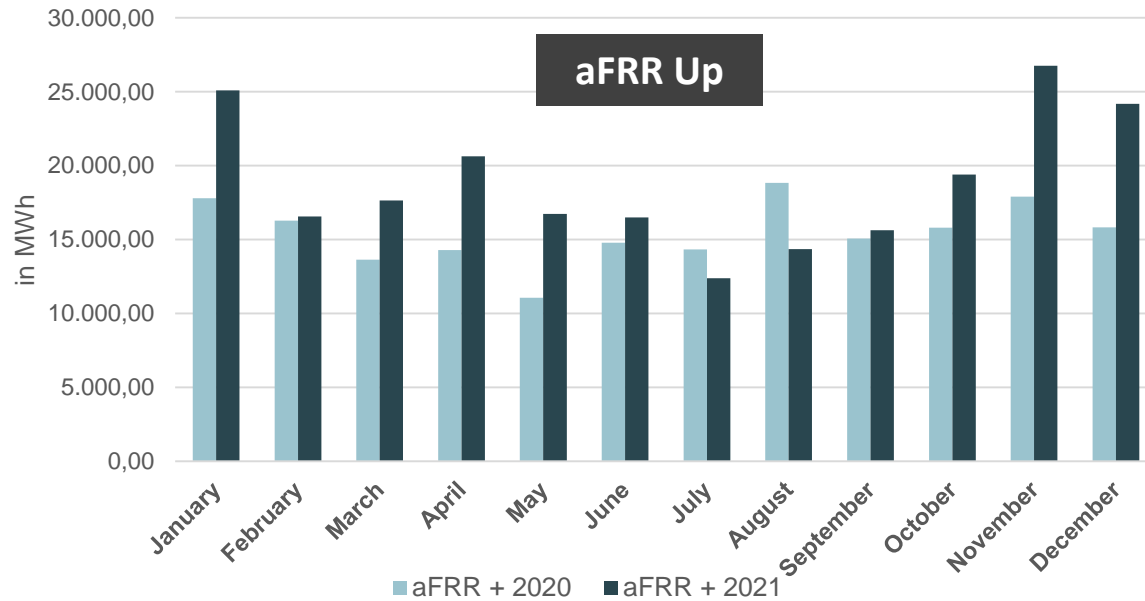
Balancing Energy – Manual activation Upwards
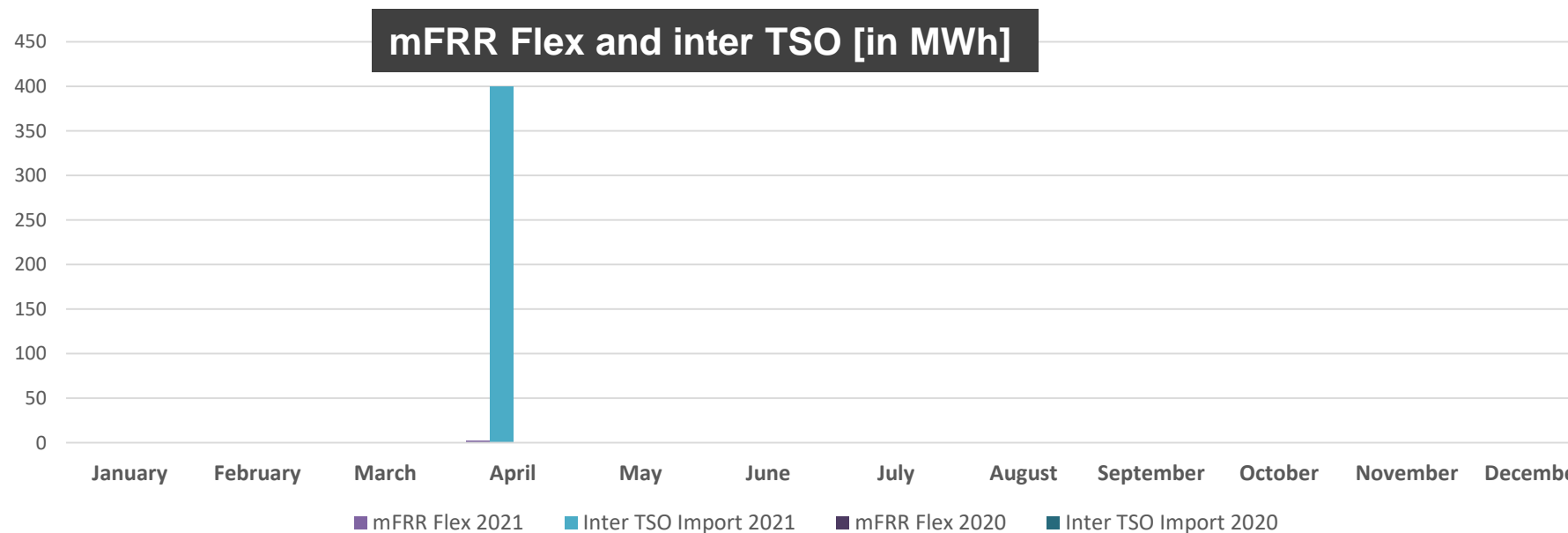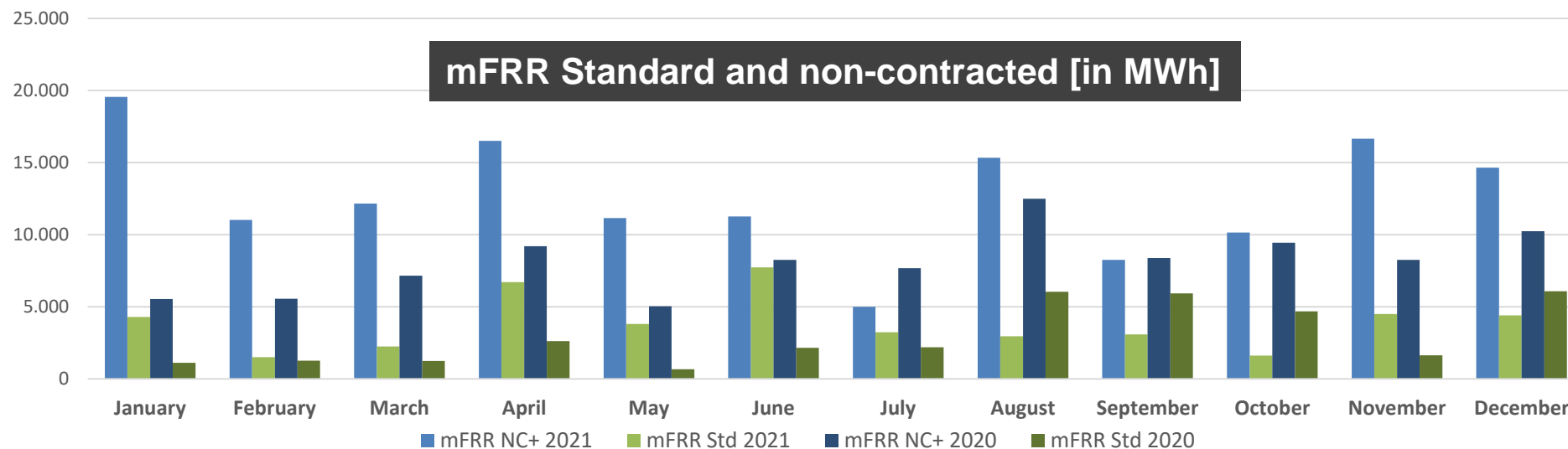
Balancing Energy – Manual activation Downwards
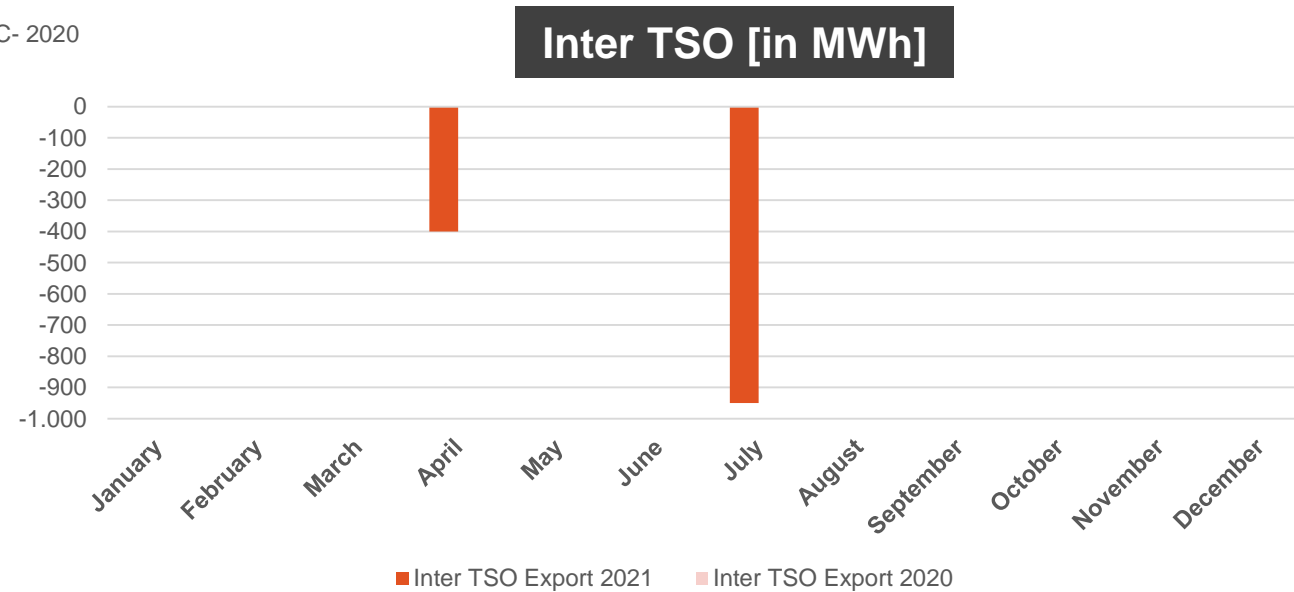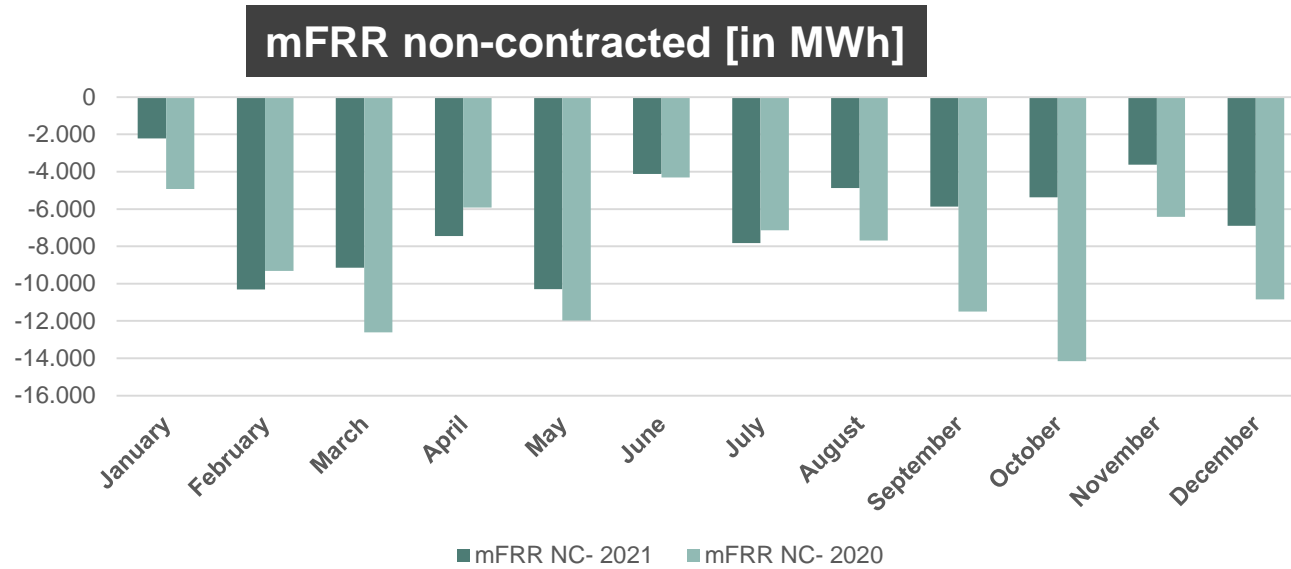
FCR Activation Control

- Maximum 6 controls and 2 controls per CCTU per month

- failure factor = (FCR Requested – FCR Supplied) / FCR Requested

- Criteria of classification in table below:

  - If failure factor <= 0% Sufficient

  - If 0% < failure factor <= 30% ; Lightly insufficient

  - If failure factor > 30% Strongly insufficient

- Most of the controls are performed on BSP providing FCR with pool of DP_{PG}

- Small decrease of performance compared to last year

	Réaction suffisante		Réaction légèrement insuffisante		Réaction fortement insuffisante		Total	
Year	2021	2020	2021	2020	2021	2020	2021	2020
FCR controls	183	199	28	9	3	7	214	215
%	86%	93%	13%	4%	1%	3%	100%	100%

aFRR Activation Control

➢ Continous control based on telemeasures

➢ Penalized energy equals the difference between the aFRR Supplied and aFRR Requested taking into account a tolerance of 15% of energy bid volume

Situation dec 21:

➢ Similar level of penalized energy compared to last year

Energie pénalisante MWh		Total
2021	Energie pénalisante MWh	10.222
	Energie aFRR activée MWh	421.964
	% Energie pénalisante / énergie activée	2,4%
2020	Energie pénalisante MWh	11.208
	Energie aFRR activée MWh	411.396
	% Energie pénalisante / énergie activée	2,7%

	2020	2021
% Energie pénalisante / énergie activée	2,72%	2,42%
Energie aFRR activée MWh	411.395,6	421.964,4
Energie pénalisante MWh	11.208,01	10.221,50

mFRR Activation Control

Examples of days for which more than 300 MW of mFRR energy has been activated by Elia

➢ In general a good delivery or a light underdelivery of mFRR energy is observed

mFRR activation 01/03/2021

mFRR activation 15/04/2021

mFRR activation 21/04/2021
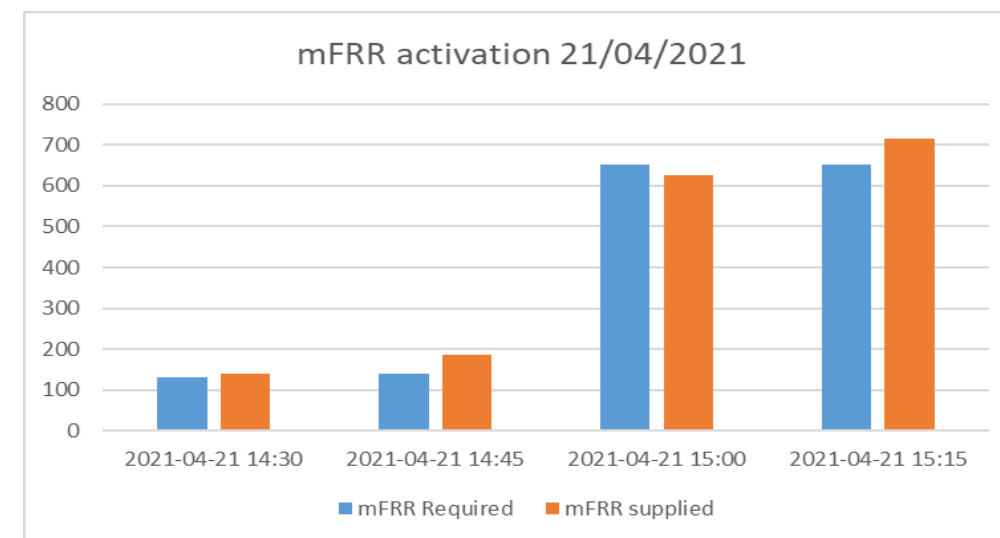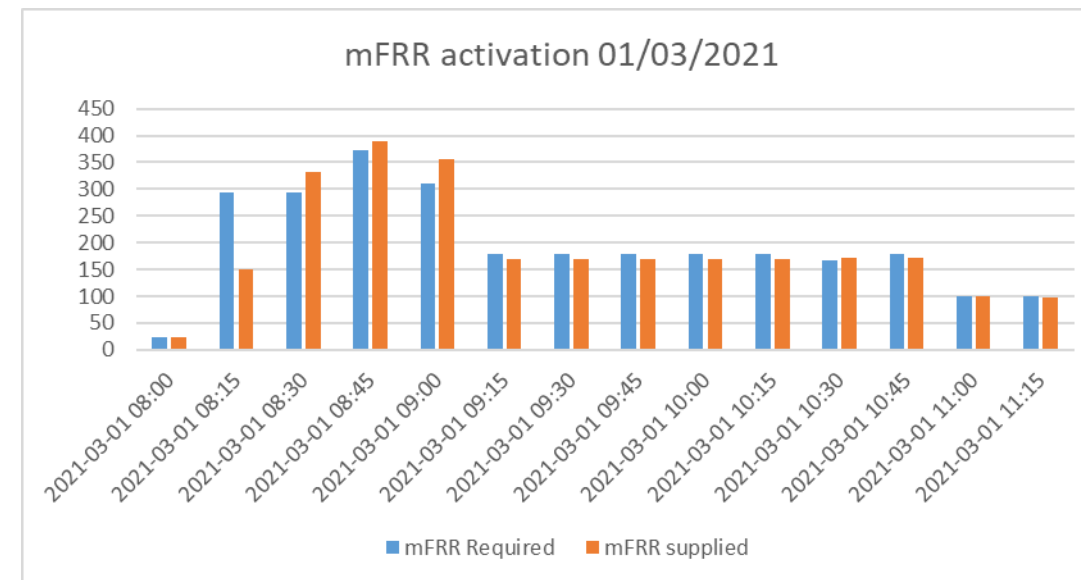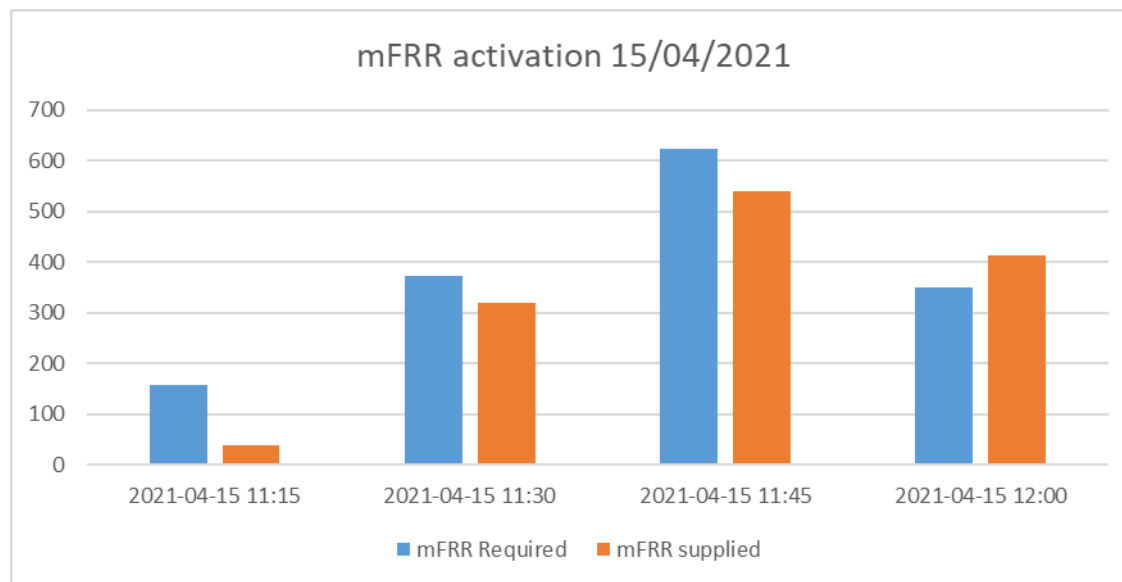
Quality

Statistics 2021
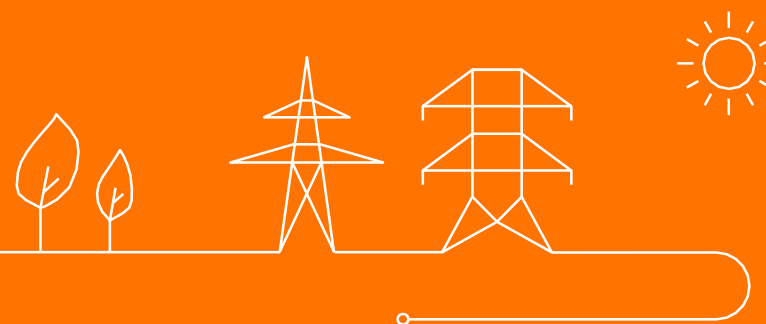
Evolution System Imbalance (last 5 years)

Evolution de la déviation standard SI et ACE 2017-2021
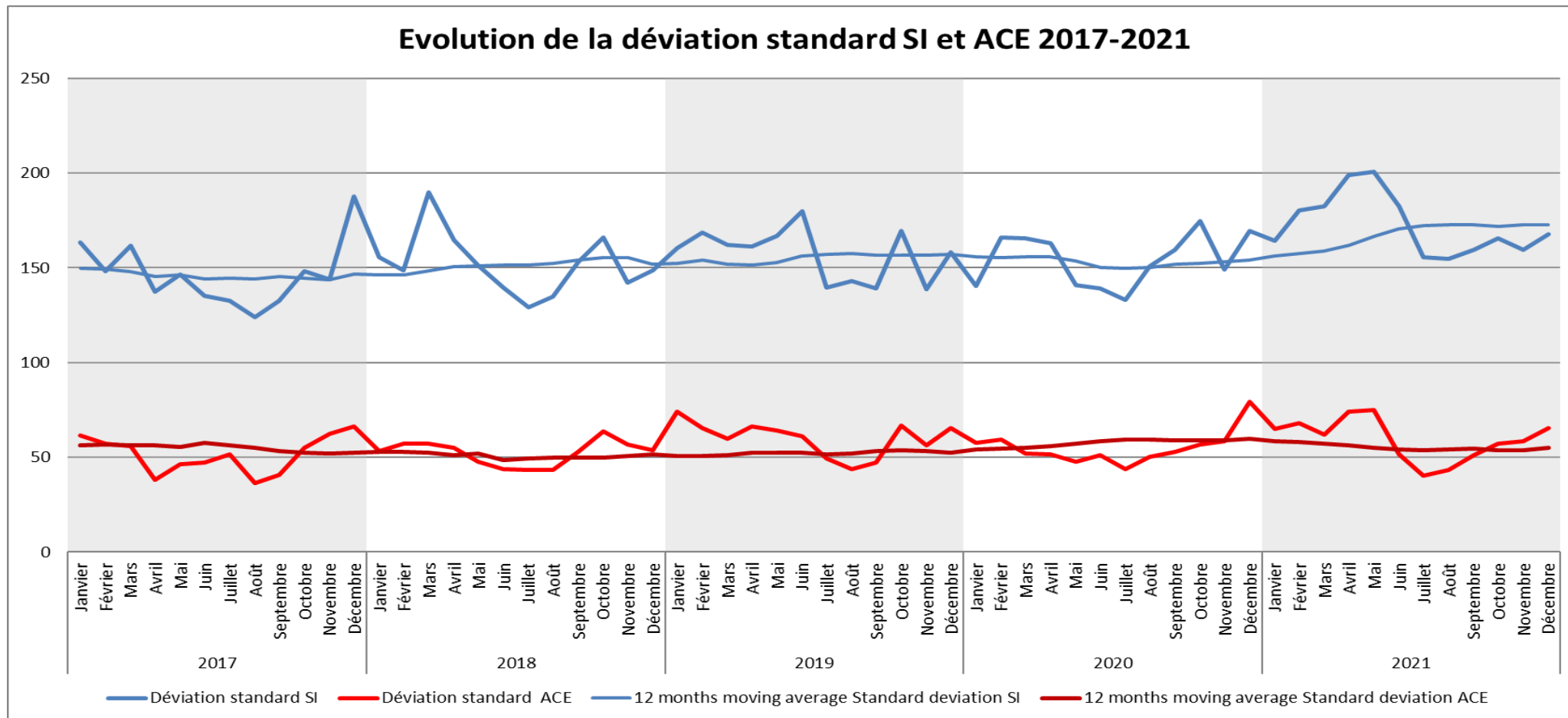
Quality Results

Monitoring FRCE Levels 1 & 2		Niveau 1		Niveau 2	
		Ref Niveau 1 (MW):	98	Ref Niveau 2 (MW):	186
Period	**# QH**	Cible % Ref	30%	Cible % Ref	5%
	Period	**# QH > Ref Niveau 1**	**% Ref**	**# QH > Ref Niveau 2**	**% Ref**
JAN	2.976	262	8,8%	65	2,2%
FEB	2.688	244	9,1%	54	2,0%
MAR	2.972	216	7,3%	51	1,7%
APR	2.880	232	8,1%	67	2,3%
MAY	2.976	252	8,5%	74	2,5%
JUNE	2.880	124	4,3%	39	1,4%
JULY	2.976	105	3,5%	22	0,7%
AUG	2.976	113	3,8%	26	0,9%
SEPT	2.880	164	5,7%	39	1,4%
OCT	2.980	203	6,8%	54	1,8%
NOV	2.880	233	8,1%	68	2,4%
DEC	2.976	266	8,9%	62	2,1%
YEAR	**35.040**	**2.414**	**6,9%**	**621**	**1,8%**

➢ Limits established in SOGL for FRCE (or ACE)

➢ Level 1 is similar to prior ACE Std Deviation indicator

➢ Level 2 is used for the extreme values (prior sigma 90, 99)

➢ For 2021, we are below the 30% and 5% required for Level 1 and Level 2 respectively

Respect in 2021 of limits of SOGL requirement for FRCE levels 1 and 2

AOB
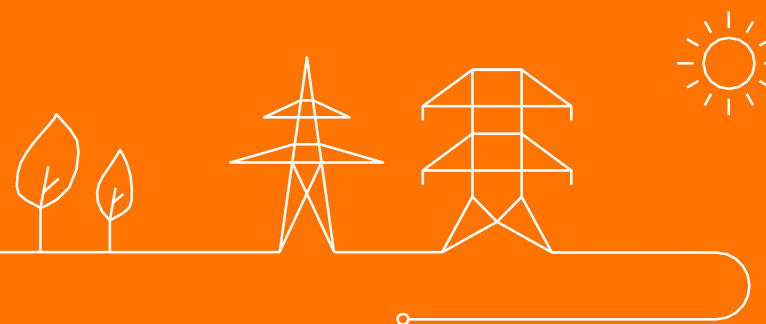
AOB – Launch of FCR Additional Properties public consultation

Presented by Didier Chim
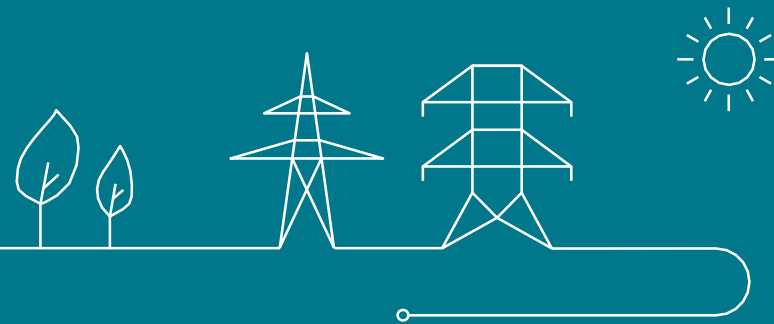
# Launch of FCR Additional Properties public consultation

The public consultation on FCR Additional Properties has been launched on 29th of April until 30th of May.

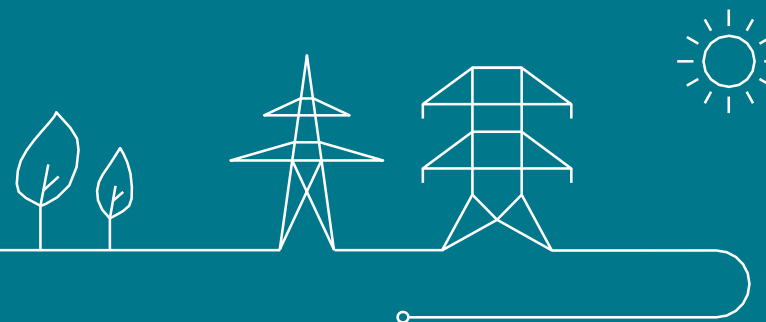Stakeholders can find all on-going public consultation on the website of Elia and are invited to provide feedback.

AOB - Current status of participation of stakeholders in workshops

Presented by Nicolas Pierreux
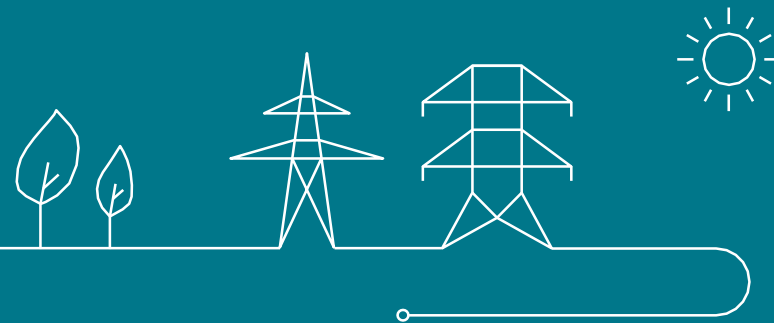
AOB – Next WG Balancing

Presented by Didier Chim

Next WG Balancing

- WG Balancing 22/06/2022 9:00 – 13:00

- WG Balancing 15/09/2022 9:00 – 13:00

- WG Balancing 27/10/2022 9:00 – 13:00

- WG Balancing 07/12/2022 9:00 – 13:00

Dates will be upload into the agenda of the [WG Balancing](#) page and [usergroups](#).

Overview of WGs and related workshops

January	February	March

WG Balancing	WG SO EMD	Usersgroup	WG Adequacy	WG Belgian Grid	WG CCMD
24/03/2022	31/03/2022	09/06/2022	21/04/2022	01/04/2022	05/05/2020
05/05/2022		04/10/2022	06/05/2022	02/06/2022	
22/06/2022		06/12/2022	19/05/2022		
15/09/2022			17/06/2022		
27/10/2022					
07/12/2022					

Workshops

V	MOG II	01/04/2022
V	Analysis and implementation of FCR evolutions conform art. 154(2) of SOGL	20/04/2022
V	study on the procurement strategies for a dynamic calculation of FRR means -	21/04/2022
!	study on the procurement strategies for a dynamic calculation of FRR means -	10/05/2022
	Evolutions of BRP nominations	20/05/2022
	Optimisation of input data for congestion management purposes	30/05/2022
	Possibilities for combo (simultaneous activation) of DPs for FCR/aFRR/mFRR ar	31/05/2022
	aFRR 5 min FAT – impact analysis and recommendations	