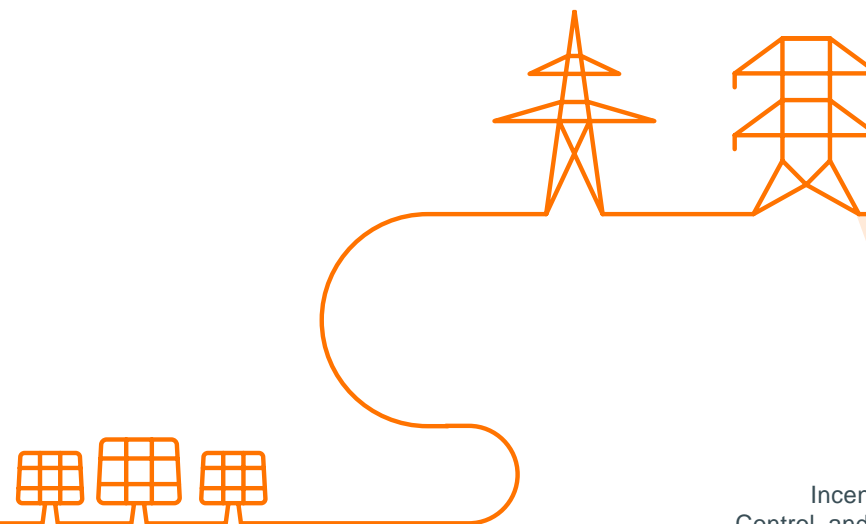# Incentive on Prequalification, Control, and Penalties – aFRR/mFRR

2nd Workshop
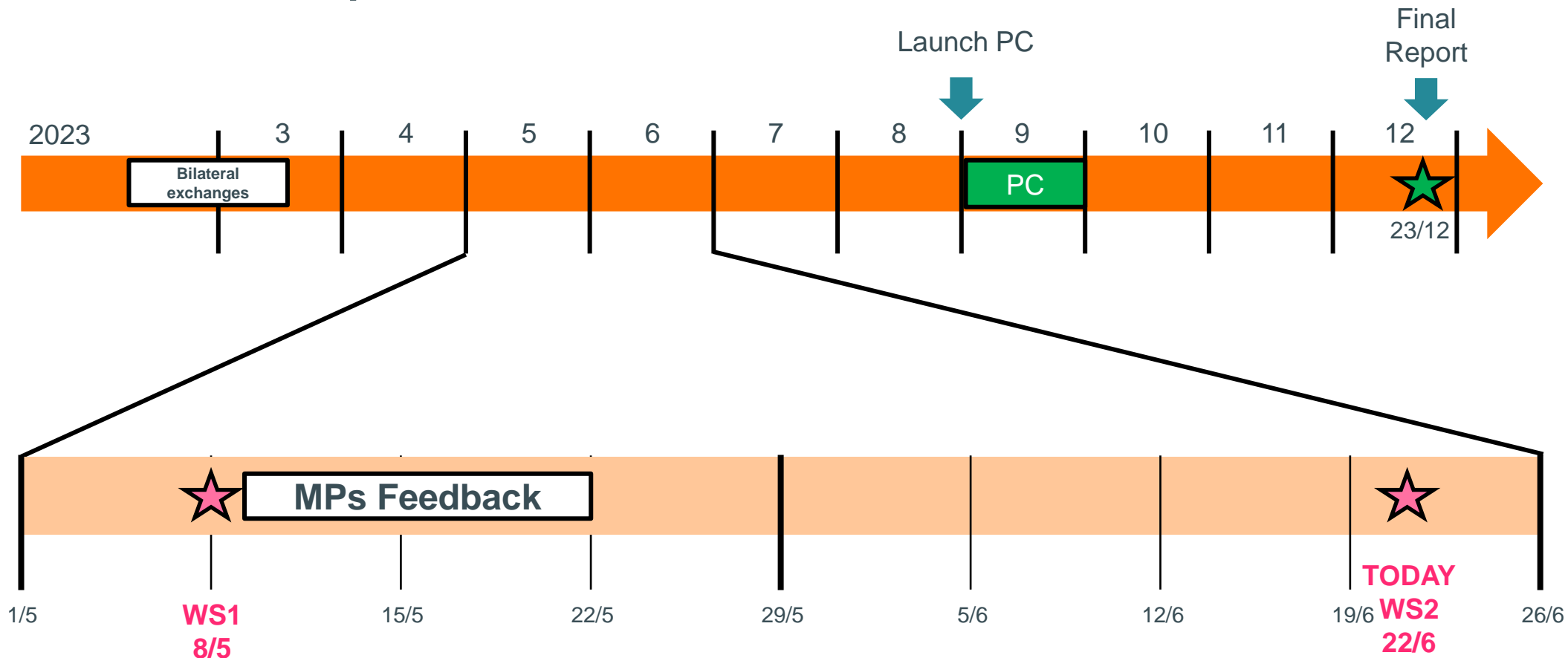
22/06/2023| Loup Vanderlinden

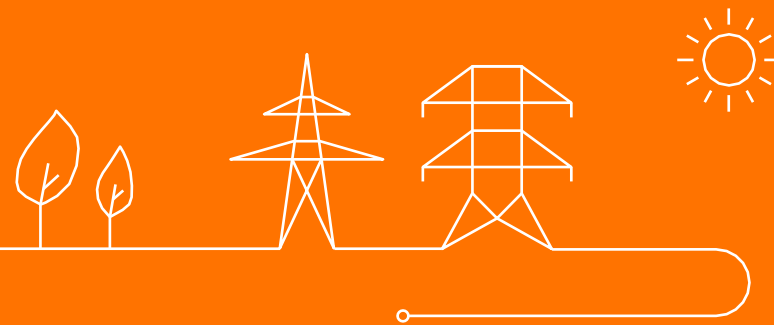# Agenda

- Onboarding & Prequalification

- Penalty for MW Made Available

- Activation Control aFRR

Incentive Roadmap

Launch PC

Final Report

2023 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12

Bilateral exchanges

PC

23/12

MPs Feedback

1/5 — WS1 8/5 — 15/5 — 22/5 — 29/5 — 5/6 — 12/6 — 19/6 TODAY WS2 22/6 — 26/6

ONBOARDING & PREQUALIFICATION

New PQ Design Proposal - Reminder

Two main takeaways:

1. The **ownership** of the **prequalified volume** will shift from the BSP to the **Grid User**

2. Amend the prequalification process to **lower barriers** to the participation of **new and existing technologies** to capacity auctions

These translate in 3 main changes:

1. Facilitation of BSP switch for the DPs prequalified individually

2. Reduction of the PQ test time window from 24h to 4h

3. Possibility to perform asymmetric PQ tests

MPs Feedback Following 1st Workshop (08/05)

The feedbacks ELIA received on the new PQ design proposal were generally positive, especially on the PQ test time window reduction and the possibility to perform asymmetric tests. However, 3 main concerns were raised:

MPs feedback

The relevance of the PQ test is questioned as a whole, highlighting that the test is only a security mechanism for small BSPs, as larger ones have more PQ volume than they are generally able to offer anyway.

On the BSP switch proposal, it is reported that the prequalification status of an asset is unknown from the other BSPs, and that it is therefore more complex to evaluate the BSP switch.

A MP would rather have a good penalty system to prevent incorrect bidding than the PQ process, to save the related operational hassle.

ELIA's response

ELIA reminds that the PQ test is meant for ELIA to check if the BSP can ramp up and down to the max volume, follow the 4s signal for aFRR, etc.
ELIA also reminds Article 159 §6 of SOGL on the FRR prequalification process: "*The qualification of FRR providing units or FRR providing groups shall by re-assessed at least every 5 years, and where the technical or availability requirements or the equipment have changed*".
⇒ After this incentive implementation, ELIA will start re-doing the PQ for the concerned assets.

ELIA reminds the willingness to make the GU owner of the prequalified volume, which means it should know if its asset has been prequalified, and how (individually or synthetically).
ELIA intends to provide the GU with this information.

This incentive intends to treat potential operation hassles that the BSP may have, while keeping the existing PQ concept as it is a requirement that cannot be removed. However, to treat them, ELIA requests MPs to be concrete on what is causing issue for them in the current operational process.

PENALTY FOR MW MADE AVAILABLE
aFRR & mFRR
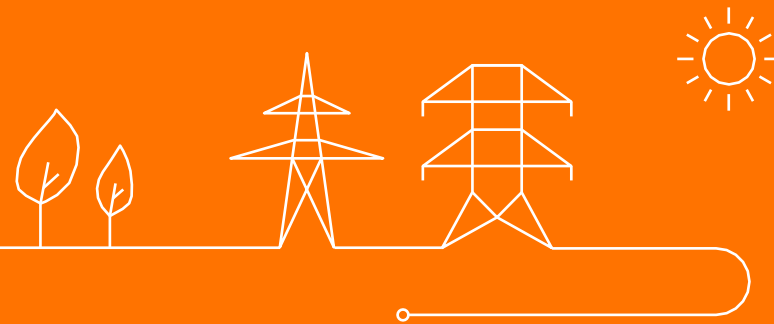
AS IS Situation – Reminder

- **Context:** After clearing of Capacity Auction, all awarded capacity bids lead to the obligation to submit contracted energy bids, which must be submitted at the latest in D-1 at 15:00. The validity period of an energy bid is 15 min. If, for one QH, the MW Made Available (per product per direction) is *lower* than the corresponding Obligation, ELIA applies the Penalty for MW Made Available.
- **Goal:** Ensure that the capacity awarded in the capacity auction is available for activation via contracted energy bids
- **Motivation:** Find right balance between incentivizing the BSPs to adequately report any unavailability & incentivizing the BSPs to fulfill their obligations
- **Current Penalty Formula (same for mFRR):**

$$P_{aFRR \text{ Made Available}}(\text{Month M}) = \sum_{\text{All CCTU of Month M}} P_{aFRR \text{ Made Available}}(CCTU)$$

$$P_{aFRR \text{ Made Available}}(CCTU) = \#CCTU_{non-compliant} * MW_{\text{not made available}} * CP_{WA}$$

- **CCTU$_{nc}$**: increases by one unit after each non-compliant CCTU in a 30-day rolling window
- **MW$_{nma}$**: difference between Obligation and MW Made Available of the given CCTU
- **CP$_{WA}$**: weighted average of the capacity prices of the bids awarded to the BSP in the 30-day rolling window (weight = volume awarded)

Main issues identified by ELIA or MP feedbacks:

1 #CCTU_nc is such that the penalty evolves quadratically, implying large penalties after a few non-compliances
⇒ Incentive to not report unavailabilities & take the risk to be tested or activated (MP feedback)

2 Penalty linked to a given non-compliant CCTU is function of previous non-compliant CCTUs in the rolling window (e.g., penalty is greater for 10 times 1 MW not made available than 1 time 10 MW not made available) (MP feedback)

Design Proposal Discussed @ 1st Workshop (08/05)

Principle:

➢ Keep a progressive penalty scheme in order to make a distinction between exceptional and frequent unavailabilities
➢ Avoid penalty levels that provide wrong incentives while still ensuring responsible behavior of the BSPs in the capacity auctions
➢ Introduce **2 penalty levels** with a **threshold** to go from level 1 to level 2 based on the average compliance in a 30-day rolling window, where level 1 is the default penalty and level 2 is meant for BSPs with *large* non-compliances in the rolling window

$$P_{aFRR\ Made\ Available}(\text{Month M}) = \sum_{\text{All CCTU of Month M}} P_{aFRR\ Made\ Available}(CCTU)$$

Level 1: $P_{aFRR\ Made\ Available}(CCTU) = factor1 * MW_{not\ made\ available} * CP_{CCTU}$
Level 2: $P_{aFRR\ Made\ Available}(CCTU) = factor2 * MW_{not\ made\ available} * CP_{CCTU}$

- **Factor1, factor2**: constants
- **MW$_{nma}$**: difference between Obligation and MW Made Available of the given CCTU
- **CP$_{CCTU}$**: capacity price weighted average of the concerned CCTU awarded to the BSP

– The feedbacks received on the new design proposal for the penalty for MW Made Available were largely positive, only 3 requests were shared:

– Attention should be paid to **design complexity** as penalty designs tend to become increasingly complex

– A MP requested to consider both the number of non-compliances & the missing volume

– Request to **define the terms introduced in the 1st workshop** (factor1, factor2, average compliance,…)

Let's Dive In the New Design Proposal

Principle:

➢ For each direction, the penalty level a BSP is in depends on the average compliance over a 30-day rolling window

➢ Proposal to calculate average compliance on day D on a rolling window between D-15 and D+15, to prevent risks of arbitrage in case a BSP is close from jumping to level 2

➢ **Average compliance threshold = 97%** * ⇒ good trade-off between a high quality of service & the possibility to have an unavailability from time to time without being penalized at level 2

➢ **Factor1 = 1.5** * ⇒ ensures that BSP loses more than its remuneration, to make it commit to its obligation

➢ **Factor2 = 3** * ⇒ Incentivizes the BSP to keep its compliance level above the threshold, to guarantee the quality of the service

➢ If level 2 is reached, every MW not made available is penalized at level 2

FYI:

$$\text{Average compliance}_{up}(D) = \sum_{D-15}^{D+15} \text{Daily compliance}_{up}$$

$$\text{Daily compliance}_{up} = \frac{1}{n} \sum_{i=1}^{n} \text{Compliance}_{CCTU_{i,up}}, \text{ where n is the number of CCTUs in day D for which BSP has an obligation}$$

$$\text{If Obligation}_{CCTU_{i,up}} \neq 0, \text{Compliance}_{CCTU_{i,up}} = \min\left[\frac{\text{Nominated volume}_{CCTU_{i,up}}}{\text{Obligation}_{CCTU_{i,up}}} ; 1\right]$$

*Subject to modifications by PC in September

ACTIVATION CONTROL aFRR
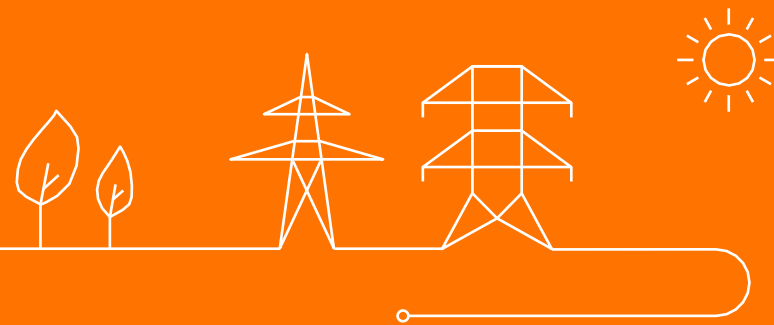
AS IS Situation – Reminder

- **Context:** ELIA continuously controls the quality of aFRR delivery via the activation control (contracted & non-contracted energy bids)
- **Goal:** Check the quality of the aFRR Supplied
- **Current Penalty Formula:**

$$\text{aFRR Energy Discrepancy penalty(M)} = 1,3 \times \frac{\text{aFRR Energy Discrepancy(M)}}{\text{aFRR energy requested(M)}} \times \text{remuneration(M)}$$

Where remuneration(M) is the sum of capacity remuneration & | energy remuneration | of the month

Main issues identified by ELIA or MP feedbacks:

1 Monthly granularity does not capture the value of the service at the time of the discrepancy, **and may lead to situations of arbitrage when large price spreads occur during a given month** (MP feedback)

2 A discrepancy linked to non-contracted bids impacts capacity remuneration, **which could prevent BSPs from submitting non-contracted bids**

3 Capacity is penalized **even in case of overdelivery**

4 Proportionality of the penalties & hierarchy between penalties

Design Proposal Discussed @ 1ˢᵗ Workshop (08/05)

It was initially considered to:
- ➤ Change energy discrepancy from monthly to QH
- ➤ Remove capacity remuneration from the formula
- ➤ Assess capacity availability via availability tests

⇒ This solves the issues **2** and **3**
   However,
   - ✕ Some MPs are concerned by the drop in the penalty such design would induce, as it may not incentivize the BSPs to deliver the service with a quality level at least as good as today, even if the penalties linked to a failed availability test were large. **Nonetheless, MPs are very supportive of the QH granularity**
   - ✕ Availability tests may not be in line with actual system needs and may need to be compensated by mFRR activations

New Design Proposal

Principle:

➢ Like for the AS IS situation, use the actual activations to define the penalty for the capacity

➢ QH granularity for energy with same principle as AS IS to limit risks of arbitrage and better capture value of the service at the time of the discrepancy

➢ Right balance to be found for the continuous capacity control granularity, between risks of arbitrage in case of large price spreads (monthly granularity, e.g.), and not giving sufficient incentives to deliver the service properly (QH granularity, e.g.)

➢ **Penalize capacity only in case of capacity underdelivery, at times when |aFRR Supplied| is lower than |aFRR Capacity Obligation|**

⇒ This solves all 4 issues identified with right calibration of the constant factors in the penalty schemes

With this design:

➢ The definition of "capacity underdelivery" is required in addition to the existing energy discrepancy

➢ Calibration of the capacity penalty required to ensure sufficient incentives to deliver the service with high quality

➢ aFRR availability tests may still be performed, in particular if part of the capacity is rarely activated (which may be the case in the future)
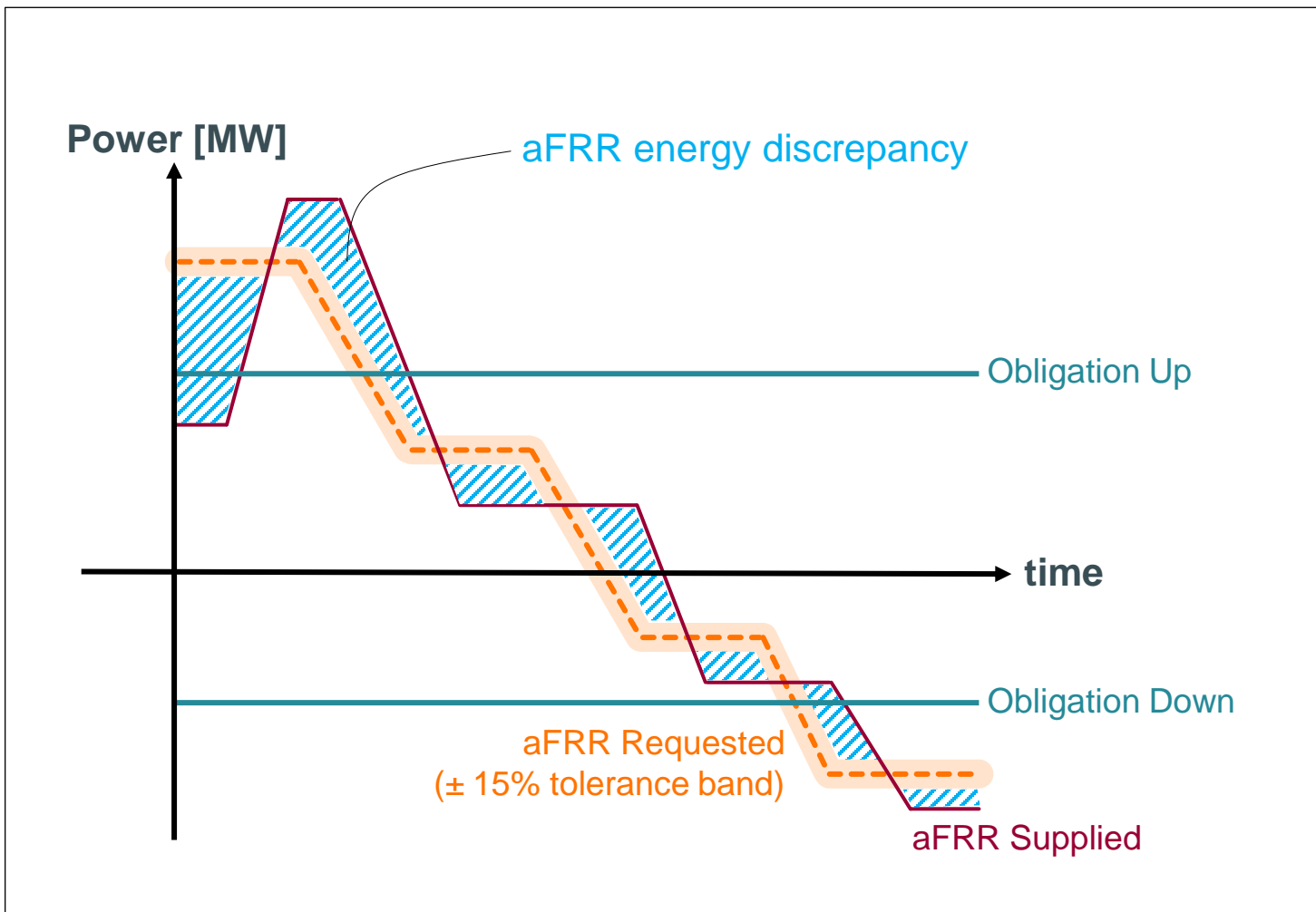
Illustration on the Granularity of the Continuous Capacity Control
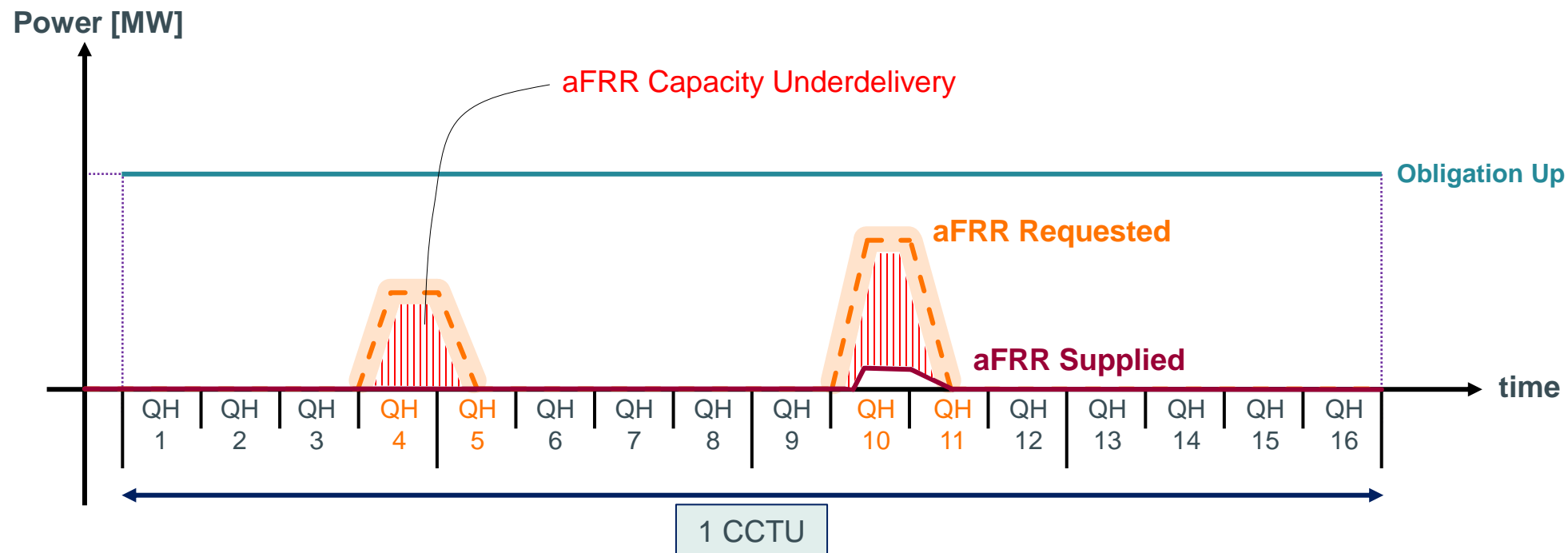
> During this CCTU, for a given BSP, aFRR Requested is different from 0 MW in only 4 QHs
> There are good reasons to believe that the capacity was not available during the other QHs of the CCTU
> With a QH granularity on capacity, the volume penalized would be very low as BSP is securing the main part of its capacity remuneration while not delivering the service properly
> Besides, some bids are not activated every CCTU, the aFRR Requested may be lower than the obligation, all BSPs do not have awarded volume all the time, etc.
> Monthly penalty does not solve risks of arbitrage in case of large price spreads
⇒ **Right balance to be found in the granularity of the continuous capacity control**

Activation Control aFRR – AS IS

aFRR energy discrepancy

Power [MW]

Obligation Up

time

Obligation Down

aFRR Requested
(± 15% tolerance band)

aFRR Supplied

aFRR Energy Discrepancy penalty(M)

$$= 1.3$$

$$X \quad \frac{\text{aFRR Energy Discrepancy(M)}}{\text{aFRR energy requested(M)}}$$
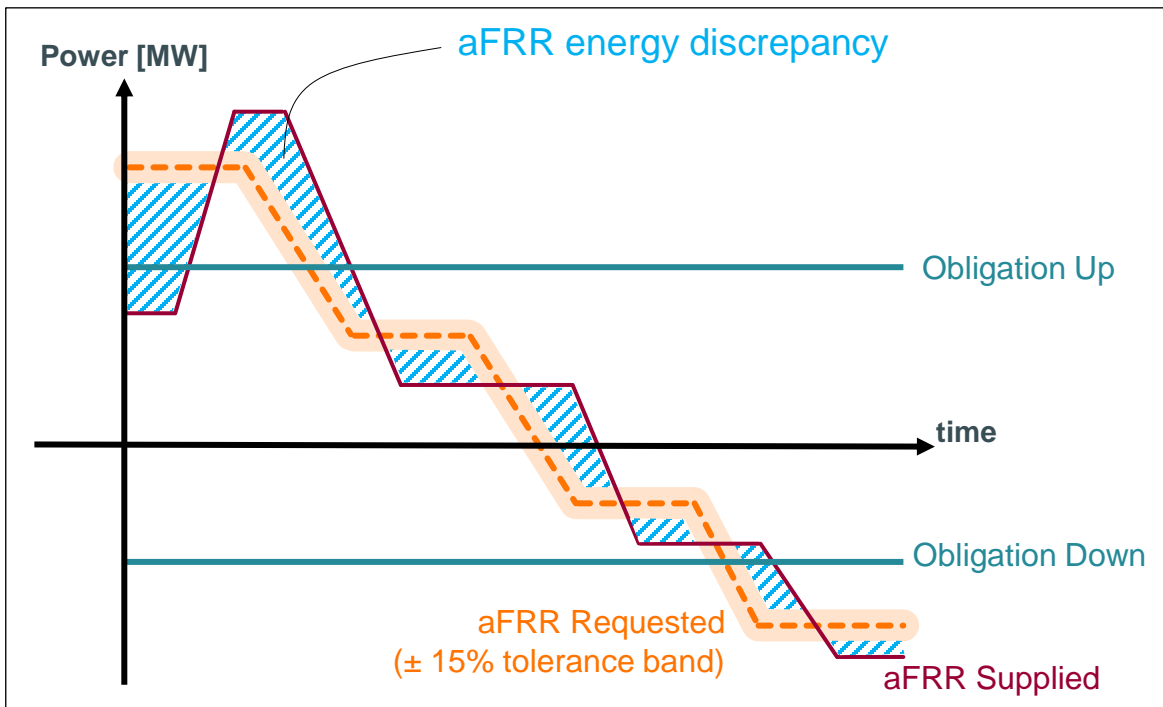
$$X \quad \text{remuneration(M)}$$

Where remuneration(M) is the sum of capacity remuneration & | energy remuneration | of the month

Activation Control aFRR – TO BE

ENERGY PENALTY   +   CAPACITY PENALTY

aFRR energy discrepancy

Power [MW]

Obligation Up

time

Obligation Down

aFRR Requested
(± 15% tolerance band)

aFRR Supplied

aFRR Capacity Underdelivery

Power [MW]

time

aFRR Energy Discrepancy penalty(QH)

$= \text{factor}_{energy}$

$\times \dfrac{\text{aFRR Energy Discrepancy(QH)}}{\text{aFRR energy requested(QH)}}$

$\times \; |\text{remuneration aFRR Requested(QH)}|$

aFRR Capacity Discrepancy penalty(week) *
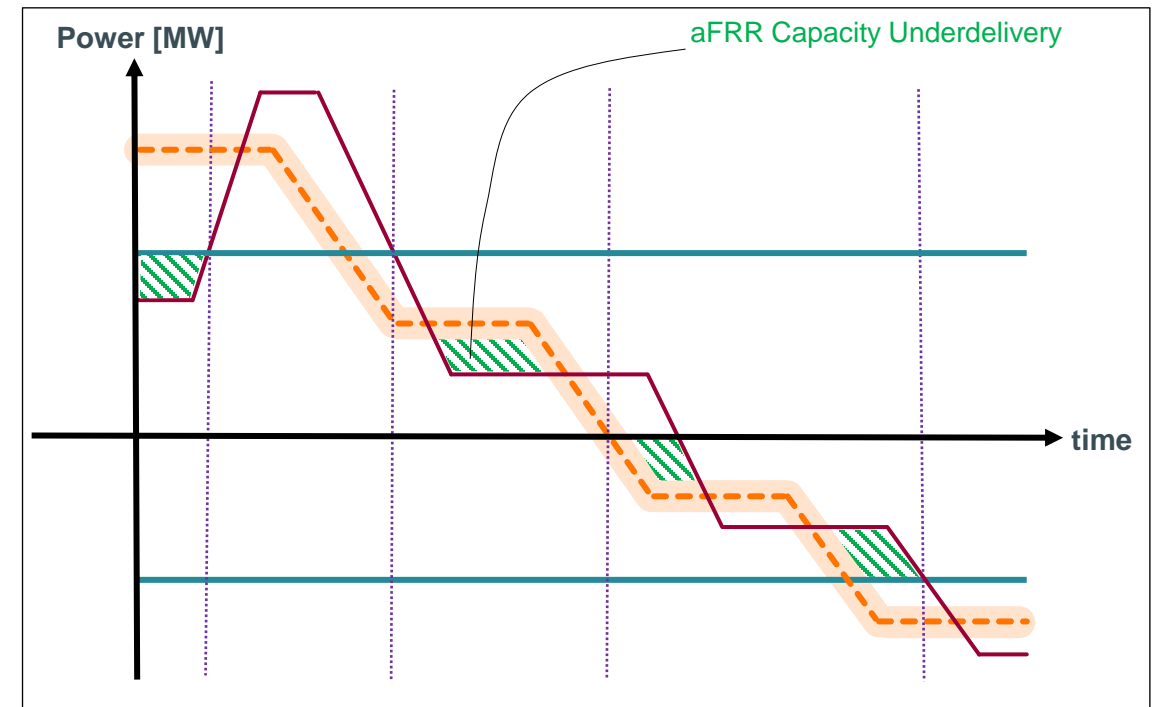
$= \text{factor}_{capacity}$

$\times \dfrac{\text{aFRR Capacity Underdelivery(week)}}{\text{aFRR Capacity Requested(week)}}$

$\times \; \text{remuneration aFRR awarded (week)}$

Penalize capacity remuneration
$\Leftrightarrow$
$[\; | \text{aFRR}_{SUP} | \; < \; | \text{aFRR}_{REQ} | \;]$
&
$[\; | \text{aFRR}_{SUP} | \; < \text{OBLIGATION} \;]$

up or down depending on sign of aFRR Req

*Subject to modifications by PC in September

Zoom In on aFRR Capacity Requested

$$\text{aFRR Capacity Discrepancy penalty(week)} = \text{factor}_{\text{capacity}} * \frac{\text{aFRR Capacity Underdelivery(week)}}{\text{aFRR Capacity Requested(week)}} * \text{remuneration aFRR awarded (week)}$$
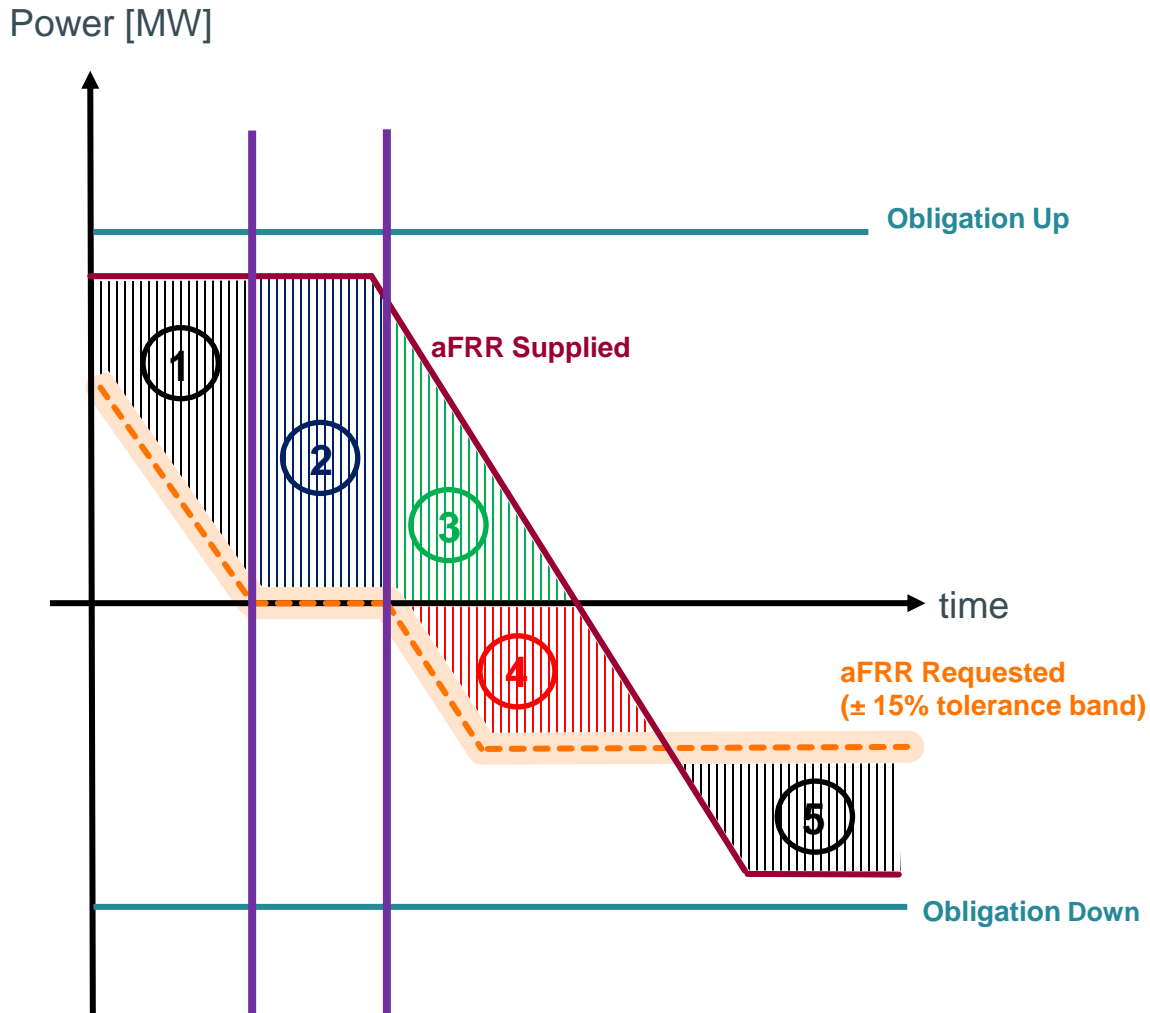

Power [MW]

aFRR Capacity Requested

Obligation Up

Obligation Down

aFRR Requested
(± 15% tolerance band)

time
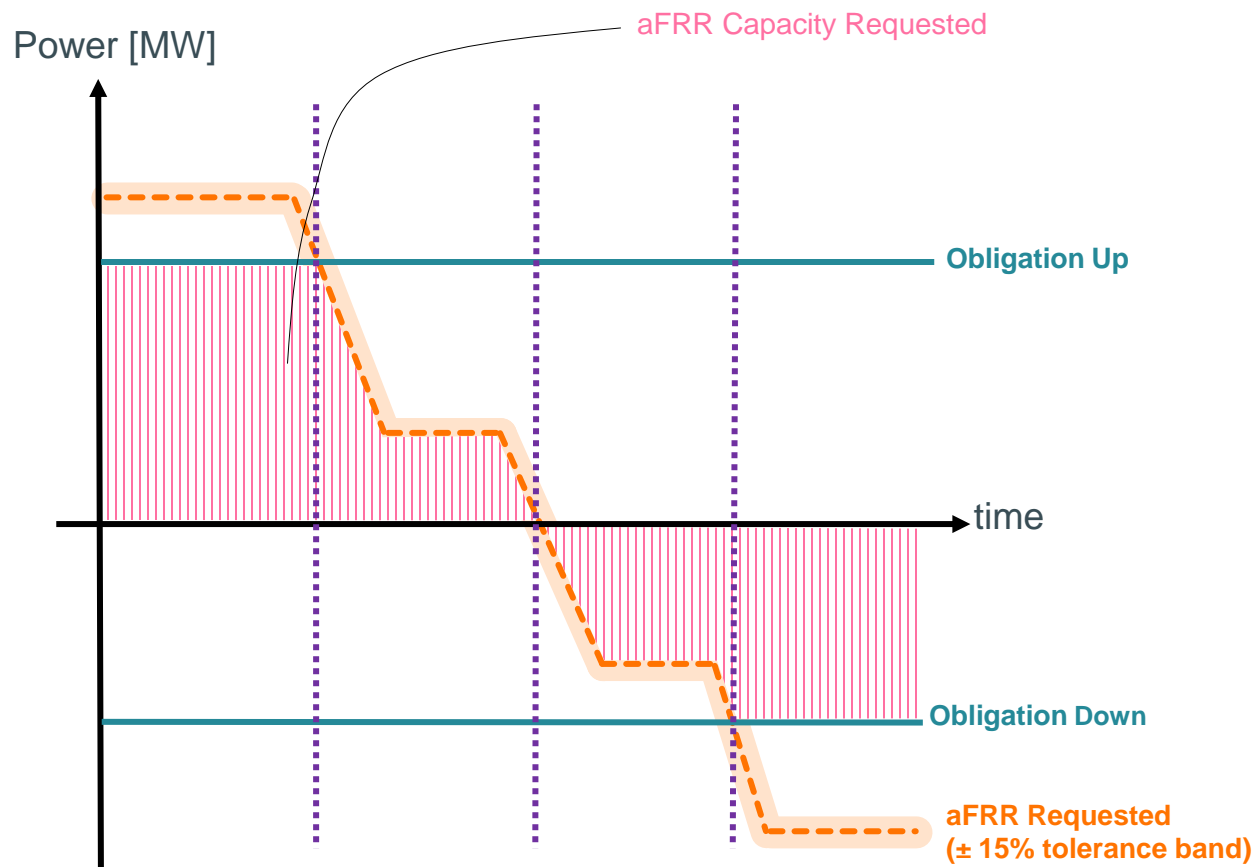
➢ In the upwards direction, aFRR Capacity Requested is capped to Obligation Up
➢ In the downwards direction, aFRR Capacity Requested is capped to Obligation Down

* Subject to modifications by PC in September

Thank you.