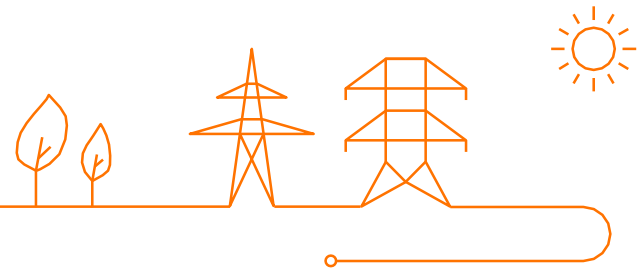
Working Group Balancing

27/11/2019 |

Agenda

1. Approval of the MoM of previous WG Balancing
2. Storm: T&C BRP status update
3. Imbalance tariff: recap on modifications of alpha parameter
4. LFC BOA & LFC means: feedback consultation
5. mFRR T&C BSP: feedback consultation
6. Balancing rules: feedback consultation
7. Balancing rules: removal of IGCC profile limits
8. iCAROS: achievements and workplan
9. Work plan 2020
10. European integration
11. ToE: external audit
12. Reassessment of ToE in the aFRR market segment
13. AOB & Next meetings



Approval of the MoM of previous WG Balancing

Comments of Next Kraftwerke on aFRR capacity tender

Request from Next Kraftwerke to reflect following discussion in the MoM:

- Next Kraftwerke asks whether an incentivizing mechanism is planned on the 2nd auction to allow for higher costs, which would give it the possibility to grow quickly enough.

  Elia answers that there are 2 incentives in the 2nd auction: the minimum volume and the 20% included in the reference price.

- Next Kraftwerke asks whether it is planned that 2nd auction can increase in larger steps, if the prices are low compared to step 1. Otherwise step 2 would be oversupplied at low prices which would not be able to attract further volume.

  Elia confirms that there's currently a maximum step size of 10 MW to increase the volume in the 2nd auction. In practice, this means that in case that price of Step 2 is low compared to step 1, the complete volume of step 1 can be transferred to step 2 in 14 weeks, which seems reasonable. In any case, Elia will perform a re-evaluation of the aFRR capacity tender methodology including this parameters after one year.

Storm: T&C BRP status update

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Offshore Integration: T&C BRP status update

T&C BRP – Updates following consultation feedback

- The "**Storm at sea" definition** has been adapted and precised
- The **Art. 15** has been modified considering the following points:
  - It has been clarified that the obligations related to offshore process only apply for BRPs which are in charge of an offshore wind park
  - The obligation to have a forecasting tool has been detailed
  - Some wording has been modified according to the feedback received
- The **Annex 6** has been modified as follows:
  - The process describing the storm detection by the BRP has been clarified
  - Some timings of the steps have been detailed
  - The description of the step 5 has been adapted to clarify the process related to the end of the storm
- The implementation date has been changed

T&C BRP – status

- The decision concerning the approval of the proposal of amendment of the T&C BRP is expected at the end of December
- Subject to positive decision of the CREG, the go-live of the new storm risk design is foreseen on **January 15th 2020**

Imbalance tariff: recap on modifications of alpha parameter

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Alpha modifications: reasons for change
(As presented to the Working Group Balancing 18/02/2018)

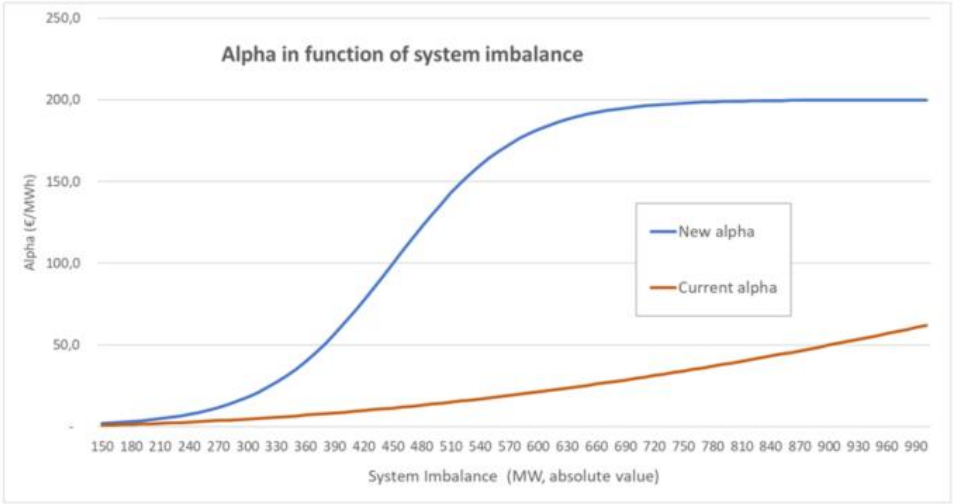
Objectives: alpha to be modified in order to

- Better incentives for BRPs in case of structural imbalances
- Apply single pricing: also an aditional incentive for BRPs with a position helping the system imbalance.

For additional information we refer to

- Slides of WG balancing of 16/10/2018, 28/11/2018, 18/02/2019
- Tariff proposal by Elia for period 2020-2023 (https://www.elia.be/en/public-consultation/20190212-key-elements-of-foreseen-evolutions-included-in-the-tariff-proposal-2020-2023)

New alpha following S-curve:



Imbalance Tariff

- **Applicable as of 1 January 2020**
- Clarifications added in formulation of formal tariff documents (specification of absolute value in order to achieve S-curve for both positive and negative imbalances)

		System Imbalance (SI)	
		Positive (net downward regulation)	Negative or zero (net upward regulation)
BRP imbalance	**Positive** *(Elia ⟶ BRP *)*	**Single price:** **MDP – α**	**Single price:** **MIP + α**
	Negative *(BRP ⟶ Elia *)*		

** Payment flow in case of positive MDP/MIP*

MDP = lowest price of all downward activations ordered by Elia for maintaining the balance in the Belgian control area

MIP = highest unit price of all upward activations ordered by Elia for maintaining the balance in the Belgian control area

If the absolute value of the system imbalance ≤ 150MW:

$$\alpha = 0$$

If the absolute value of the system imbalance > 150MW:

$$\alpha = a + \frac{b}{1 + \exp\left(\frac{c - x}{d}\right)}$$

Parameters:

a = 0 €/MWh
b = 200 €/MWh
c = 450 MW
d = 65 MW

x = the moving average of the absolute value of 'System Imbalance' in qh(t) and qh(t-1)

LFC BOA & LFC means: feedback consultation

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Results of the Public Consultation

4 answers are received which are non-confidential. The consultation report will be published on Elia's website together with the new version of the LFCBOA and LFC MEANS after approval by CREG

FEBEG

FEBELIEC

Actility Benelux (ACTILITY)

Belgian Offshore Platform (BOP)

Categorized three types of questions :

1. **General questions**
2. **Questions on the methodology (FRR needs and FRR means)**
3. **Questions on transparency**
4. **Questions on the phase out of mFRR FLEX**

The feedback received during the consultation resulted in a modification of Elia's initial proposal on the LFC Means Article 6:

4. Elia will cover the required positive reserve capacity for mFRR with a capacity of mFRR Standard determined by the minimum of a threshold determined at 490 MW and the required mFRR balancing capacity. The remaining required positive reserve capacity, if positive, is procured by means of the products mFRR Standard and mFRR Flex. […]

6. The minimum capacity specified in paragraph 4 will be increased to 640 MW as from July 1, 2020. ~~and to the full mFRR balancing capacity as from January 1, 2021 to be procured following upon agreement with the regulator concerning the phase out the "flex" product."~~

Public Consultation : general questions

- **FEBELIEC warns for the risk of linking evolutions in time (T&C BSP mFRR and LFC BOA / LFC Means)**
  - ELIA recognizes this risk and tries to avoid such situations wherever possible.
  - The current formulation of the implementation planning already avoids a delay of the T&C BSP mFRR due to LFC BOA.

- **FEBELIEC does not support any reservation of cross-border capacity for balancing**
  - Elia has no intention of reserving cross-border capacity in order to increase the capacity of reserve sharing
  - Elia refers to the ongoing discussions regarding the methodologies for the reservation of cross-zonal capacity on EU level.

- **FEBEG appreciates that Elia already starts publishing the dynamic FRR needs in December.**
- **ACTILITY welcomes the principle of dynamic dimensioning**

Public Consultation : methodology (1)

Dimensioning of the FRR needs

- **FEBEG comments on the justifications of applying the aFRR limitation**
  - Elia refers to the justifications given in the explanatory note (i.e. acceptable system security and FRCE-quality)
  - Elia will monitor the FRCE-quality and can take necessary measures when facing substantial decrease
- **FEBEG comments on the 'lagging' effect of a new offshore wind park on dimensioning FRR needs**
  - Elia justifies that the effect is minor as (1) limited as offshore parks are generally connected one at a time and (2) the effect is very short term before taken into account in the dimensioning
- **FEBEG comments on the reliability level of 99,0%**
  - Elia refers to the justifications given in previous LFCBOA (and Dossier Volume 2019)
- **BOP asks to include offshore wind park as dimensioning incident**
  - Elia refers to the justifications given in previous LFCBOA (and Dossier Volume 2019), based on conclusions of the offshore integration study

Public Consultation : methodology (2)

Dimensioning of the FRR means

- **FEBELIEC requests clarification of justifications on the shared capacity accounted in the dimensioning**
  - Elia refers to the explanatory note (combination between legal limits of SOGL and limits to maintain sharing as an exceptional measure, specified in the mFRR sharing agreements)
- **FEBELIEC requests additional clarification of the calculation of the aFRR non-reserved**
  - Elia refers to the explanatory note explaining how it determines based on offered non-contracted balancing energy bids
- **FEBELIEC urges to develop methods to better take into account the non-contracted means (and also clarify the method to take into account storage)**
  - Elia takes already into account all potential capacity which can be considered guaranteed (but today only downward)
  - Elia will continue refining its methods to maximize the amount of non contracted which can be taken into account
- **FEBELIEC hopes that future changes will be extensively justified**
  - Any change will occur via RfA on LFCBOA or LFC Means and will be preceded by a public consultation

Public Consultation : transparency

- **FEBELIEC asks for an indication of the results with the dynamic dimensioning method**
  - Elia tries to be as transparent as possible with the data dump (November) and daily publications (December)
  - Elia clarifies that the upward FRR needs today is generally driven by the dimensioning incident
- **FEBELIEC asks to guarantee transparency and foresee clear recurrent assessments of the method**
  - In addition to the above-mentioned elements, Elia will also report to CREG on regular basis. A first review of the results is foreseen in Q1 2020
- **FEBEG asks to publish a benchmark**
  - Elia explains that market players will already have this benchmark available with the publication of the parallel run of February 1 2019 to December 1 2019
- **ACTILITY proposes a historical back testing of the dynamic dimensioning**
  - Elia explains that this was the objective of the parallel run (results are available on Elia's website)
  - Elia also foresees a yearly ex post analysis of the available FRR means versus FRR needs (Q1 2020)

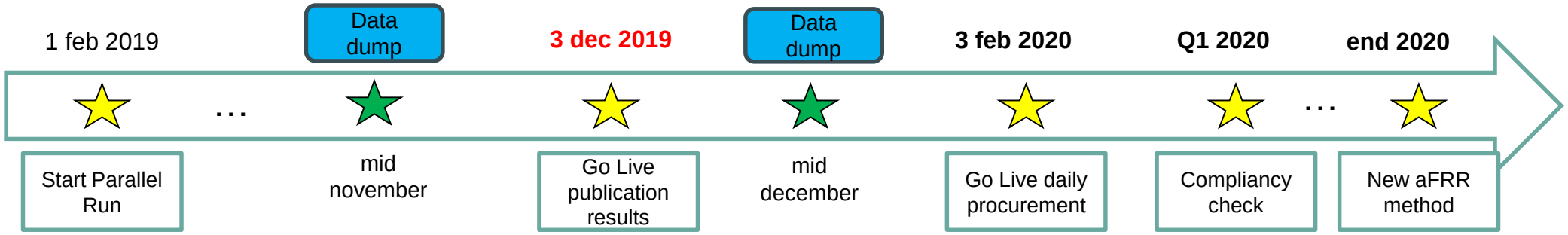
Public Consultation: phase out mFRR FLEX

- **FEBEG welcomes the reduction of mFRR FLEX share.**
- **FEBELIEC urges to be cautious with reducing mFRR FLEX shares in view of consumer costs.**
  - Elia presented and consulted the reasons for the foreseen phase out :
    - Better answer to the operational needs of the system / A level-playing field for all technologies
    - Allow a full merit order for activation of mFRR energy bids / Simplify products and processes

    + Not at least, the standardization towards one product is a prerequisite for the Belgian balancing market in European platforms for the exchange of mFRR
  - Clear and gradual phase-out calendar is desirable and in other to take into account the risks stated by FEBELIEC, Elia will conduct an analysis in Q1 2021 before pursuing the product phase out.

- **ACTILITY is worried that the phase out may be achieved sooner in practice when dynamic dimensioning reduce the FRR needs on regular basis**
  - As the upward FRR needs are mainly driven by the dimensioning incident, Elia clarifies that this risk is low

Next steps



- **Elia published a data dump of the parallel run (PROB99, DET N-1, FRR needs) for up- and downward FRR**
  - In order to make a consistent database, parallel run is re-simulated ex post to take into account new parameters proposed in the LFC BOA (e.g. outage probabilities), as well as including corrections and improvements during the parallel run (https://www.elia.be/en/electricity-market-and-system/system-services/keeping-the-balance)

- **Elia will start publishing day-to-day balancing capacity on the website of Elia as from December 3, 2019 (volumes to be contracted under a dynamic dimensioning approach): https://www.elia.be/en/grid-data/balancing/capacity-volumes-needs**

mFRR T&C BSP: feedback consultation

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General info on the T&C BSP mFRR consultation

Non-confidential responses from:

- Febeg
- Febeliec
- Actility
- Centrica
- RWEST
- Statkraft

+ 2 confidential responses

General conclusion:

- Constructive feedback
- Support for Elia's general vision, with some comments and suggestions for specific points

Result:

⇒ Some minor changes to the T&C BSP mFRR

⇒ No more changes in design for the penalties

⇒ Some points noted for future design review

Overview of feedback to the consulted T&C BSP mFRR (1) - Support

Positive feedback and appreciation expressed for:

- The approach for open discussions & improvements made based on stakeholder feedback (informal consultation, workshop)
- Elia's hard work on drafting the new proposal T&C BSP mFRR including the merge former contracts

- Specific topics:
  - First steps in harmonization between CIPU/non-CIPU (but request noted for further harmonization)
  - Evolution to paid-as-cleared remuneration mechanism
  - New penalty proposal following the feedback of stakeholders (but some suggestions for modifications)
  - First step towards smart testing, with some suggestions for further improvements

Overview of feedback to the consulted T&C BSP mFRR (2) - Concerns with changes to T&C for submission

Overview of changes to the T&C for formal submission to CREG:

Ref.	Stakeholder feedback	Elia modifications to the T&C BSP mFRR
Annex 6	Request to reduce the period for the organization of the prequalification tests.	Elia changes the time window for prequalification tests from 48 hours to **24 hours**.
Art. II.10.8 + Annex 10.E	Concerns with multiple communication flows regarding outage of Technical Unit.	Elia adds that the additional outage communications by e-mail consist of a **best effort** of the BSP.
Annex 10B	Comment that link with BRP responsibility has to be acknowledged as reason to reject the activation on non-contracted DPsu energy bids.	Elia adds the reason **"Flexibility for fulfilment of BRP obligations"** to the list of reasons accepted by Elia for (partial) rejection of activation of non-contracted mFRR energy bids including delivery points DPsu
Annex 11D	Comment that check on "Missing MW" is one-directional: change formulation in T&C.	The binary value equals to 1 if the mFRR Supplied is inferior to (instead of "not equal to") the mFRR Requested.
Annex 14	Request for specification regarding CPwa: change formulation in T&C.	Elia adds the specification in the definition of the CPwa that it concerns the awarded mFRR Capacity Bids "to the BSP".

Overview of feedback to the consulted T&C BSP mFRR (3) - Concerns without changes to T&C

Comments & concerns (more information on next slides) (non-exhaustive):

- Concerns with go live during winter period
- Comments on availability tests and penalties (general remarks as well as some concrete suggestions)
- Clarification on description of ‘forced outage’
- Suggestions to review to further improve the penalty for “MW not made available”
- Price cap for energy bids at 13.500€/MWh

Overview of feedback to the consulted T&C BSP mFRR (4)

STAKEHOLDER FEEDBACK	ELIA FEEDBACK
Go live during winter period	Elia maintains its proposal to implement these changes as soon as possible, concretely in February 2020. As presented previously to the Working Group Balancing: ➢ Entry into force as quickly as possible of the new mFRR design including daily procurement, improvements for the mFRR Standard and Flex Products, and remuneration of mFRR energy based on a paid-as-cleared mechanism. ➢ Important design changes to lead to a more efficient mFRR market.
Availability tests & penalties ➢ Mainly comments and new suggestions related to: ▪ Merge tests and penalties for availability and activation ▪ Clarification on suspension of delivery points	Elia maintains the T&C BSP mFRR as consulted: ➢ Elia will in 2020 work on a **smart testing logic** (priority set as a CREG incentive) and based thereon (in addition to experience with the new design) re-analyse the need to adapt availability and activation controls in the next design review. ➢ **Suspension of delivery points** only concerns delivery points that were: ▪ **Common** in the three non compliant bid activations ▪ **Confirmed** as used for the mFRR activation (so listed in the confirmation message)
Forced outage: ➢ Clarification of definition	The consulted definition includes the requested clarifications.

Overview of feedback to the consulted T&C BSP mFRR (5)

Penalty for MW not made available	Elia maintains its proposal of the penalty as consulted in the T&C BSP mFRR :
➢ Mainly comments and new suggestions to modify:	• **Feedback** on the new design for the “MW (not) made available” penalty was both **positive and negative.** • The **new proposal** responded to **fundamental comments shared by stakeholders** during the workshop in September. Some new suggestions were not in line with these comments.
▪ the ‘aggravating factor’ (incentive to not report minor unplanned incident)	➢ **Important for Elia** to maintain the **aggravating factor** in the penalty, which served to make the distinction between one-time non-compliances and structural problems. **Alternatives** would make the penalty **too weak for Elia or too stringent for stakeholders**. Incentive to not report minor incident can only be large enough in case of frequent problems.
▪ link with the formula with penalty for failed availability test	➢ The **link** between both penalties “mFRR Made Available” and **“Missing mFRR”** remains in terms of **order of magnitude** of the result (no direct link needed in the equations to calculate the penalties).
▪ Use of average capacity price of the BSP	➢ Higher **incentive to not report** unavailabilities if the penalty would be linked to the **market situation**.

Overview of feedback to the consulted T&C BSP mFRR (6)

Maximum price for energy bids: non-compliant with Clean Energy Package (art. 3 of the Electricity Regulation)	The **T&C BSP mFRR** include the **value** of the maximum price for energy bids (13500€/MWh). The **Balancing Rules** include the **principle** of the maximum price and the procedure for review of the value. Elia maintains the principle of the maximum price as it is compliant with the spirit and the letter of the Electricity Regulation: - Free market-based bid prices - Actions that prevent free determination are to be avoided but not forbidden ➢ In application to mFRR: - Free market-based bid prices in normal market circumstances - Maximum bid price to protect market parties and customers against impact of exceptional circumstances - Maximum bid price should normally not affect the mFRR clearing price. If this would occur more frequently, in accordance with the Balancing Rules Elia will start a procedure for review of the maximum price.

Implementation BSP

- Technical guides shared during summer
- Demo environments launched for:
  - STAR (tool for capacity bidding)
  - BMAP (tool for energy bidding)

⇒ Elia Customer Relations and IT experts available for any questions and support.

Planning

- Go-live dynamic dimensioning & new mFRR design: February 2020
  - 3 February 2020: first daily capacity auction
  - 4 February 2020: first energy bidding/delivery following new design
- Regulatory trajectory:
  - LFC BOA & LFC Means: formally submitted by Elia >>> CREG decision by 5 December
  - **T&C BSP mFRR: to be submitted by Elia on 3 December >>> CREG decision by 20 December**
  - Go-live without new ToE Rules (but to be approved as soon as possible thereafter – impact application Pass-through regime)

At the latest on 20/12 Elia will inform stakeholders of regulatory confirmation for the go-live early February.

Balancing rules: feedback consultation

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Feedback to the Balancing Rules consultation

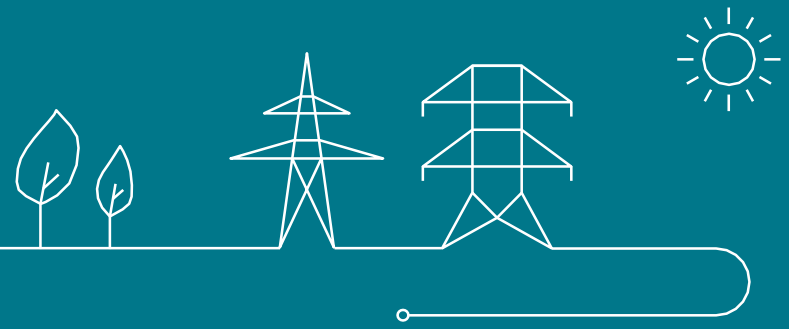
Non-confidential responses from: Febeg, Febeliec

STAKEHOLDER FEEDBACK	ELIA FEEDBACK
Comments on abolition of Winter Product (Slow bids non-CIPU) & lack of technology-neutrality in balancing products	Elimination from Balancing Rules concerns a clean-up of the document in line with earlier announced and approved evolutions. As discussed previously in Working Group Balancing: introduction of the product for Slow non-CIPU Incremental bids was announced as a temporary measure that was applicable until 31 March 2019 as an exceptional measure under exceptional circumstances. The development of a technology neutral product would require a redesign, which Elia is willing to take in the future but currently does not consider as a priority. The maintenance of the use of “slow CIPU bids” follows from the obligation in the Federal Grid Code (art. 226) for PGM of 25MW or more to put flexibility at the disposal of Elia regardless of ramping rates.
Comments on phase-out of mFRR Flex	Relaxation of the phase out calendar and evaluation of liquidity in Q1 2021 (see also consultation report LFC BOA & LFC Means)
Coherence with FCR evolutions not introduced earlier	Balancing rules will be adapted accordingly
Some clarifications in formulation	Balancing rules will be adapted accordingly

Planning

- Balancing Rules to be approved by go-live of dynamic dimensioning & new mFRR design: February 2020
- Regulatory trajectory:
  - **Balancing Rules: to be submitted by Elia on 10 December >>> CREG decision end of January**

Balancing rules: removal of IGCC profile limits



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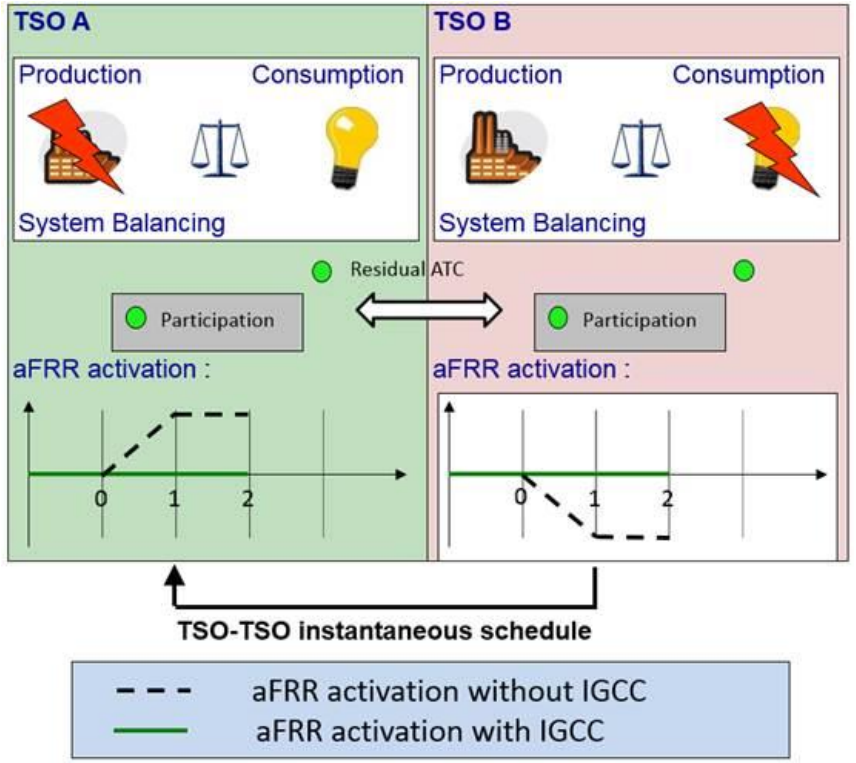
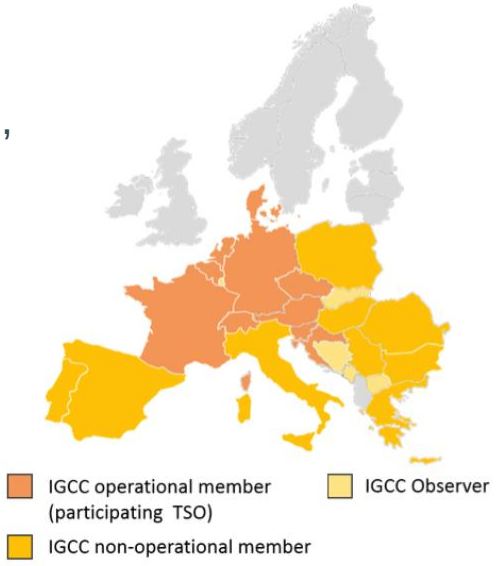
Principles of IGCC

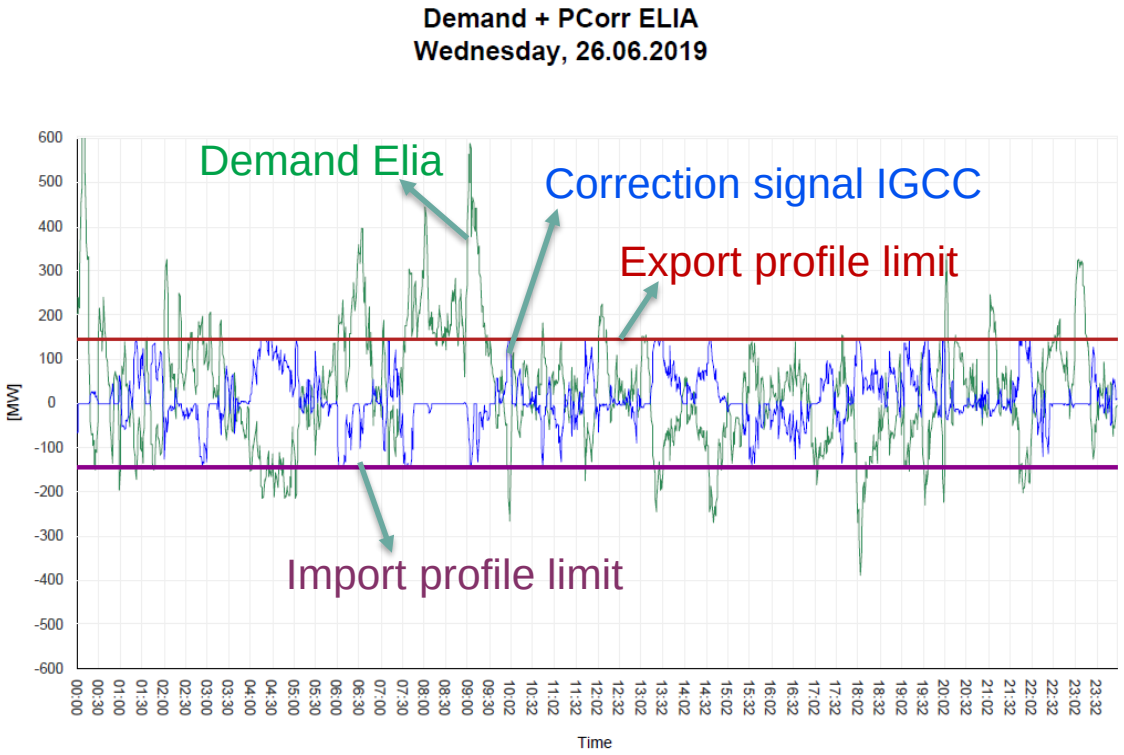
- The International Grid Control Cooperation (IGCC) platform automatically compensates for any opposite imbalances in the participating TSOs' systems, provided that there is sufficient ATC
- IGCC boosts the efficiency of the European balancing system and benefits participating TSOs by eliminating the need to activate aFRR in opposite directions.
- Currently 13 TSOs connected to the platform, 10 more are in the process of joining





Principles of profile limits

- Currently, the netting potential via IGCC for the Elia LFC Block is limited to the aFRR band of Elia (≈ 145 MW)
- Reasoning behind this limitation: in case the netting via IGCC vanishes, the resulting imbalance can either be covered by aFRR activation, either remains reasonable in amplitude (if aFRR is already fully activated) compared to ACE quality targets



Legal framework

- The limits mentioned in the Imbalance Netting Implementation Framework (INIF) have a temporary character. Those are intended to be used for operational security reasons. This rule is assumed to apply starting 1 year after approval of the INIF

➔ No permament limits allowed after this date

- The balancing rules currently mention this permanent profile limit (version before ongoing modification)

> La puissance de déséquilibre pouvant être mise en commun dans le pool est limitée d'une part par la capacité disponible aux frontières, après clôture des allocations de capacité intra-journalières[15] et d'autre part par le volume de puissance de réglage secondaire réservée par chaque GRT.

➔ Text modified in the consulted version of the balancing rules

Analysis of profile limits removal: impact on activations

- mFRR activations: the trigger to activate mFRR is the System Imbalance, not the ACE

  ➔ No impact on mFRR activations

- aFRR activations:
  - Study performed on 2016 data showed an increase of 7% volumes netted (netting is limited by ATCs and netting potential)
  - To be put in perspective with other changes, e.a. the increase of RES and the removal of the volume cap for aFRR activations as of July 2020

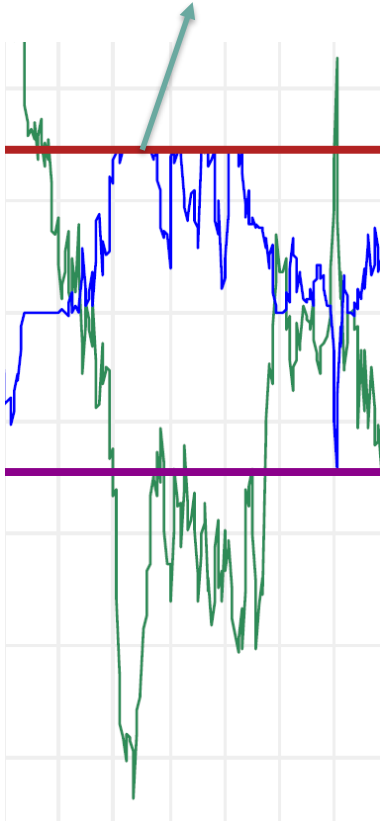
Analysis of profile limits removal: impact on ACE

- Elia performed an analysis to evaluate the impact of the removal of profile limits on ACE quality
  - In the largest majority of the cases, the suppression has a positive impact
  - One specific case where profile limits have a beneficial impact on the instantaneous ACE has been identified
  - The few expected occurrences where the profile limits have a beneficial impact on the ACE are largely compensated by the advantages of allowing netting above |145MW|

➔ Expected impact on ACE quality is positive

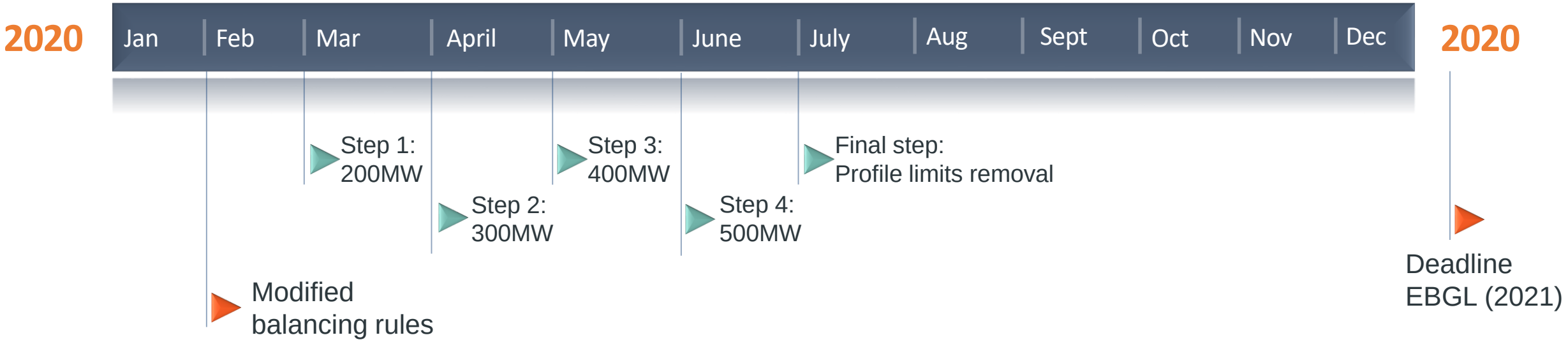
- Removal of the profile limits is consistent with the future implementation of PICASSO, where profile limits would imply a limitation on import / export of activated aFRR
- The System Operator will have the possibility to limit the netting potential at any time for system security reasons

IGCC netting was capped by profile limit



Planning

- Stepwise approach: progressive increase of IGCC profile limit towards no limitation
  - Increase the profile limit per steps (145MW, 200MW, 300MW, 400MW, 500MW) every 4 weeks.
  - Close to the end of each 4 week-period, Elia will assess the impact, identify lessons learned and validate the next increase.



iCAROS: achievements and workplan

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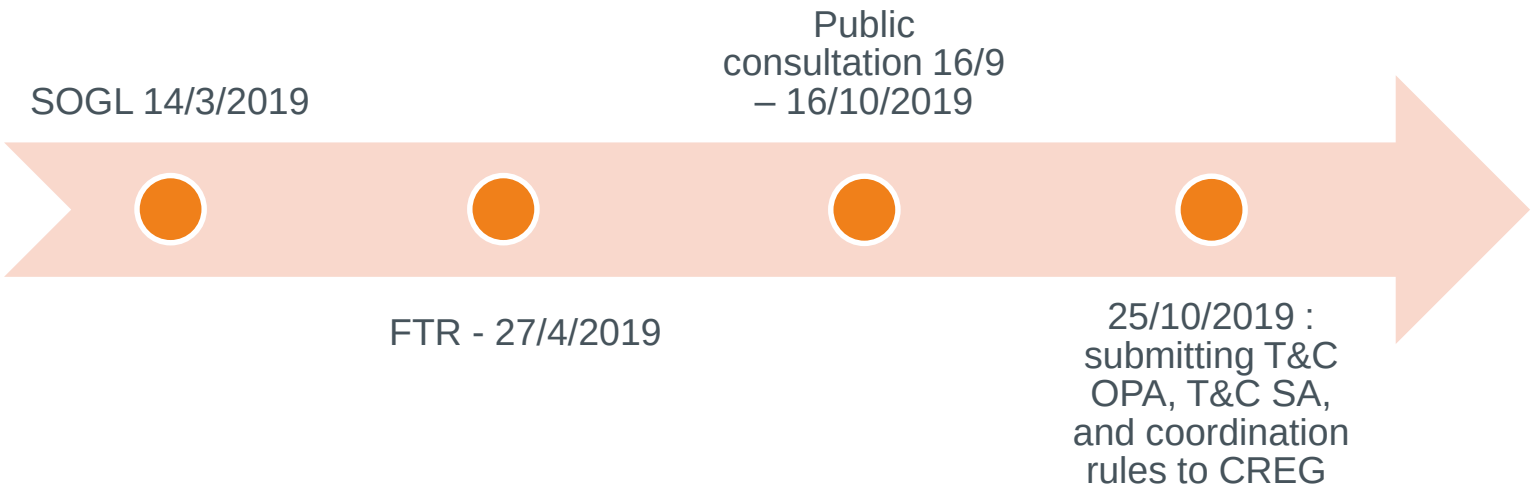
Achievements 2019 : iCAROS implementation project

Deliverable 1 :

Compliance with SO GL as long as WIN-WIN and in agreement with all stakeholders

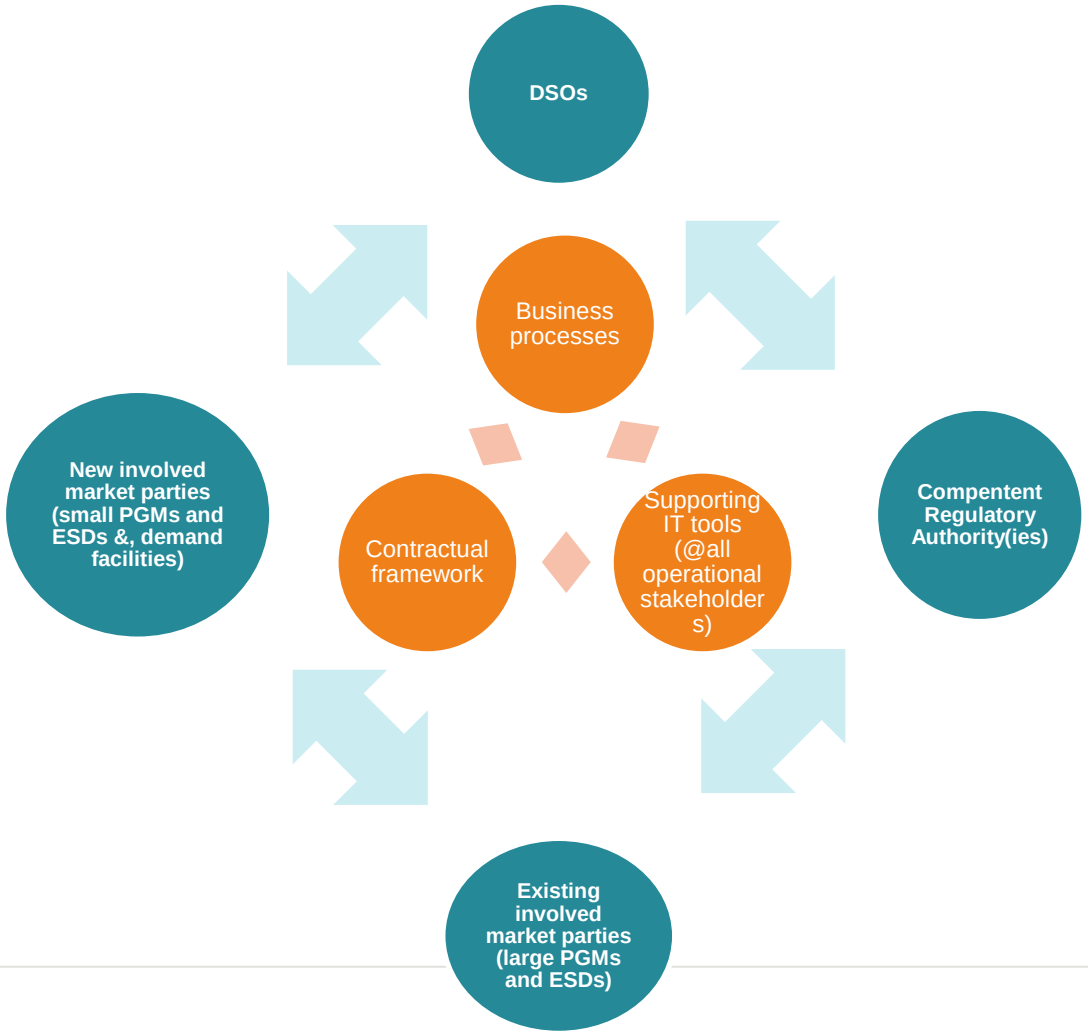
first version of T&C OPA, T&C SA & Rules for Coordination and Congestion Management



Achievements 2019 : iCAROS implementation project

Deliverable 2 :

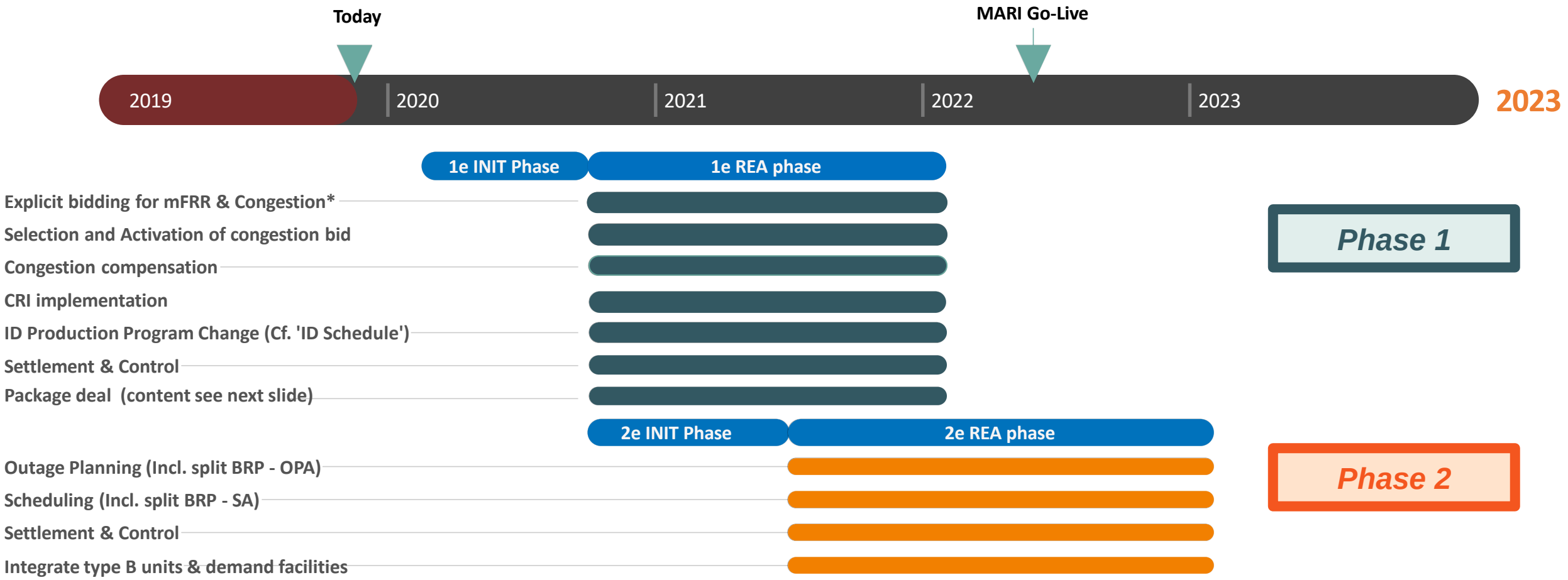
Realistic phased implementation of the iCAROS implementation project



Stakeholder input 2019 – iCAROS fine-tuning workshops

- Workshop 1 : 2/4/2019 : Bidding of flexibility for redispatching: bid properties & Scheduled data exchange DA/ID for Energy storage [iCAROS design]
- Workshop 2 : 22/5/2019 : Processes regarding outage planning [iCAROS design]
- Workshop 3 : 24/6/2019 : Processes regarding Scheduling [iCAROS design]
- Workshop 4 : 25/9/2019 : Public consultation regarding the T&C OPA and T&C SA and the Rules for Coordination and Congestion Management [AS IS design]
- Workshop 5 : 23/10/2019 : Methodology to assess the Congestion Risk Indicator (CRI) [iCAROS design]

Current target planning for iCAROS phased implementation : TSO target design



* The introduction of explicit bidding for the current “CIPU” PGMs need to be introduced at the same time as such this is part of the iCAROS project

Ambitions 2020: iCAROS implementation project – FULL SCOPING of PHASE 1 BY SEPT 2020 – LAUNCH IT DEVELOPMENTS OCT 2020

BIDDING BY SA

CONG Bidding block
- *Explicit bidding for congestion*

SELECTION & ACTIVATION

CRI filtering mFRR/aFRR

CONG Selection & Activation

Congestion compensation

Package deal (IF approved by regulatory authority)
- *Cost based CONG activation DA & ID*
- *Freedom of dispatch*

SCHEDULING BY SA

ID Scheduling

CONGESTION INDICATOR CALCULATION BY ELIA

CRI determination

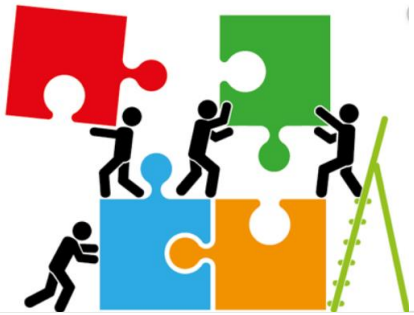
To be scoped – to be viewed whether this is part of iCAROS project

SETTLEMENT

PUBLICATIONS

Stakeholder input 2020 – iCAROS fine-tuning workshops

- Workshop 1 : 11 March 2020 – Start-up Phase 1
- Workshop 2 : 16 June 2020 – Follow-up Phase 1
- Workshop 3 : End Sept 2020 – Fine-tuning scoping Phase 1
- Workshop 4 : Begin December – initialization phase 2



Work plan 2020

WG Balancing 27th of November 2019

Content

- Status product road maps FCR, aFRR, mFRR & next steps
- Discretionary incentives 2020
- Status other product evolutions
  - LFC BOA 2020
  - MVAR
  - iCAROS

Disclaimer: this is draft work plan developed based on information which is available today. Further changes to this work plan are not excluded.

Status product road maps FCR, aFRR, mFRR & next steps

R1/R2/R3: product roadmaps with 3 major steps

Open products to all
- ✓Alll technologies (batteries, load,..)
- ✓All players (independent BSP)
- ✓All voltage levels (TSO & DSO levels)

2016 → 2020

Product opening

Open our products to all:

- Technologies
- Market parties
- Voltage levels

Market rules harmonization

- Energy bidding rules
- Generic prequalification rules
- Generic activation controls
- Generic Rx performance controls
- Merit order activation

Contractual harmonization

1 standardised contract for all flexibility

Steps in function of regulation / EU discussions

EU

mFRR design aFRR design FCR design

Disclaimer: all timings are indicative, subject to further detailed impact assessment and dependencies

Overview proposed roadmap (as on 30/11/2017)

Step 2: bid ladder market ***Step 3 MT model*** ***TBC iCAROS implementation***

2018 2019 2020 202x

ENERGY

- Free bids non CIPU (ToE)
- Non CIPU Rx bids (ToE)
- Common MO activation
- Marginal pricing
- Non CIPU bids (free & Rx)*
- Common MO activation
- Generic GFA
- Generic GFA
- Marginal pricing

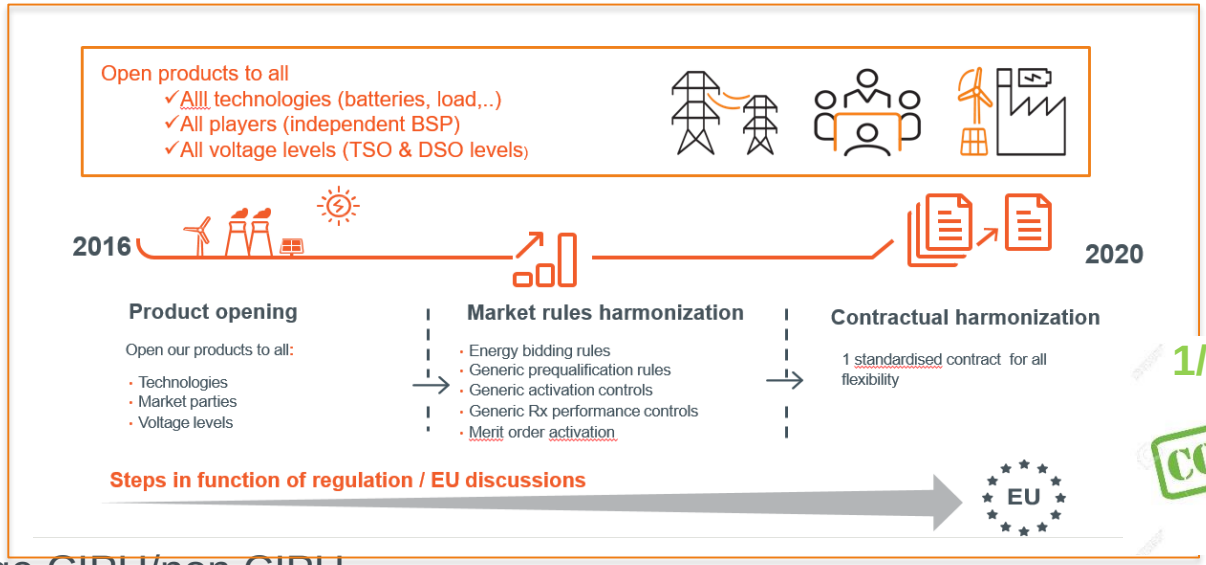
EU BAL. ENERGY MARKETS

NEEDS & CAPACITY

- **Daily** procurement **Down** (6*4h)
- Downwards dynamic dimensioning (outage only)
- Start Phase out R3 Flex
- **Start Daily** procurement **Up** (6*4h)
- Down & Upwards dynamic dimensioning (machine learning)
- **Start Daily** procurement (6*4h)
- Separate procurement FCR/aFRR (study in 2018)
- Generic GFA & new Rx availability control
- Generic GFA & New RX availability control
- Generic GFA

* ToE aFRR subject to to technical feasibility

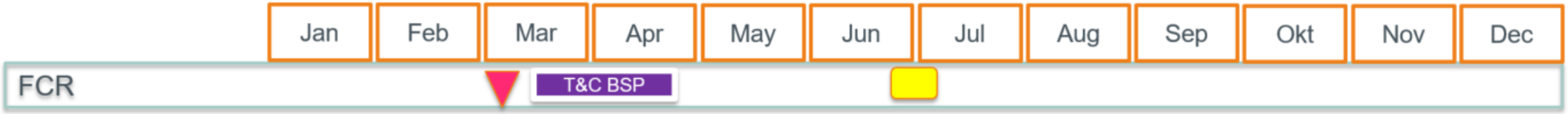
FCR



1/7/2020

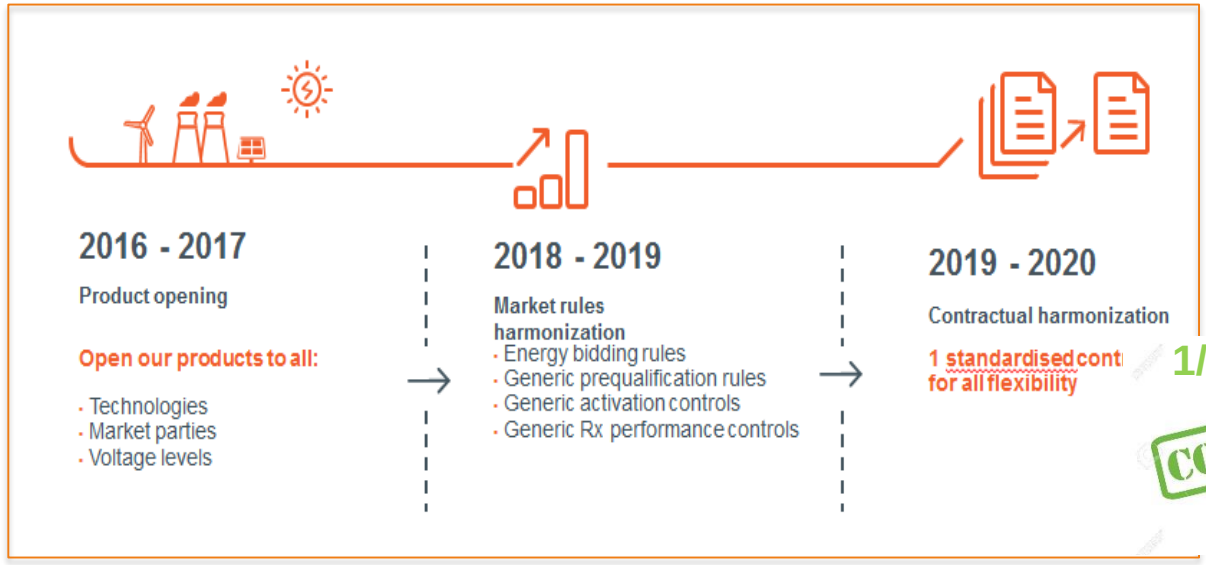
COMPLETED

- **Change on 1/7/2020**
  - Implementation 3th step; Contractual merge CIPU/non CIPU
  - Daily tendering 6*4h
  - Marginal pricing
  - All Bal. Capacity procured on Regeleistung

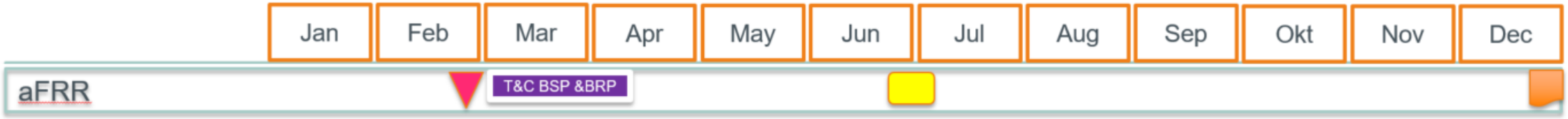


- **Next steps**
  - Minor product updates
  - Regional harmonisation

aFRR



- **Change on 1/7/2020**
  - Direct implementation of 3 steps
  - Portfolio bidding
  - Merit order activation energy
  - start gradual development target model: daily tendering 6*4h & merit order selection
  - Market access BSPs: BRP= BSP, opt out & passed through
- **Next steps** EU
  - Join Picasso Q1 2022 (Deadline EBGL 1/7/2022)
  - First design note on product changes end 2020/Early 2021



Update of T&C BRP for aFRR shall include topics like bank guarantee, suspension, force majeure,….

mFRR roadmap Q4 2016

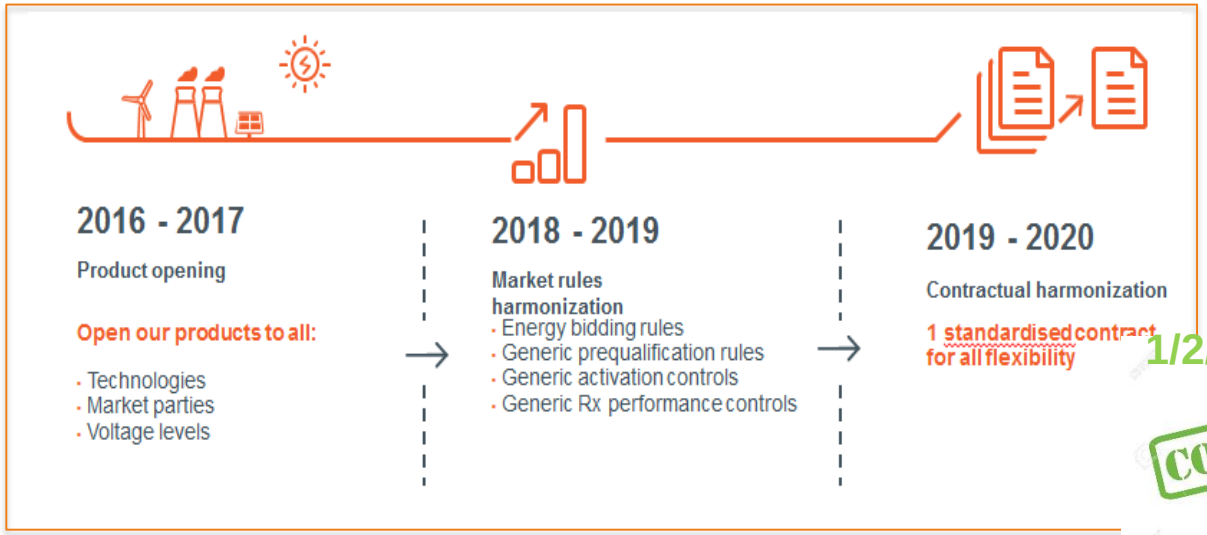
EIF NC on EB (?)

NEMO go Live

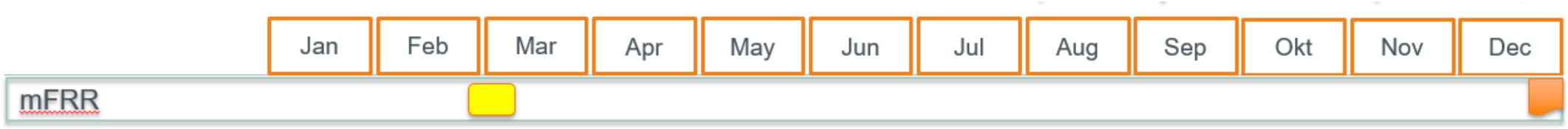
Start CoBA for mFRR/aFRR (?)

	Step 1: Product opening 2017	Step 2: bid ladder market 2018 - 2019	Step 3 MT model 2019 - 2020
Reserve	• R3 Standard: open R3 Prod to non CIPU • R3 Flex : open R3 DP to CIPU • ICH: no change but facilitate move to R3 Flex	• Stop ICH (?) • R3 Down • Non CIPU R3 Standard and Flex are liquidity providers on Bid Ladder	• Generic R3 & portfolio biddings • 1 GFA for all providers • Dynamic dimensioning • Congestion management
Energy	• Free bids: open to BRP & FSP (Bid Ladder with ToE – TSO connected) • Keep separate MO activation (free bids then R3)	• Free bids: open to BRP & FSP (Bid Ladder with ToE) • Act. price for all R3 bids (link TOE) • Common MO activation (free bids and R3)	• Full Bid Ladder platform • Standard products
		Integration of reserve and energy	
Nom & Controls	• No change (CIPU vs non CIPU)	• No change (CIPU vs non CIPU)	• Stop R3 CIPU nom • New Rx controls
Sourcing	• Monthly except ICH yearly (No more KB!)	• Up: Monthly or shorter • Down: Daily with 4 hours blocks	• Daily with 4 hours blocks
GFA	• GFA CIPU & GFA Non-CIPU	• GFA CIPU & GFA Non-CIPU	• GFA Generic

mFRR



- **Change on 1/2/2020**
  - New availability control; activation tests
  - Implementation 3th step; Contractual merge CIPU/non CIPU
  - Daily tendering 6*4h, merit order selection
  - Marginal pricing for settlement bal. energy
- **Next steps** EU
  - Join MARI Q2 2022 (Deadline EBGL 1/7/2022)
  - First design note on product changes end 2020/Early 2021
  - Major Change: explicit bidding for CIPU (see iCAROS)

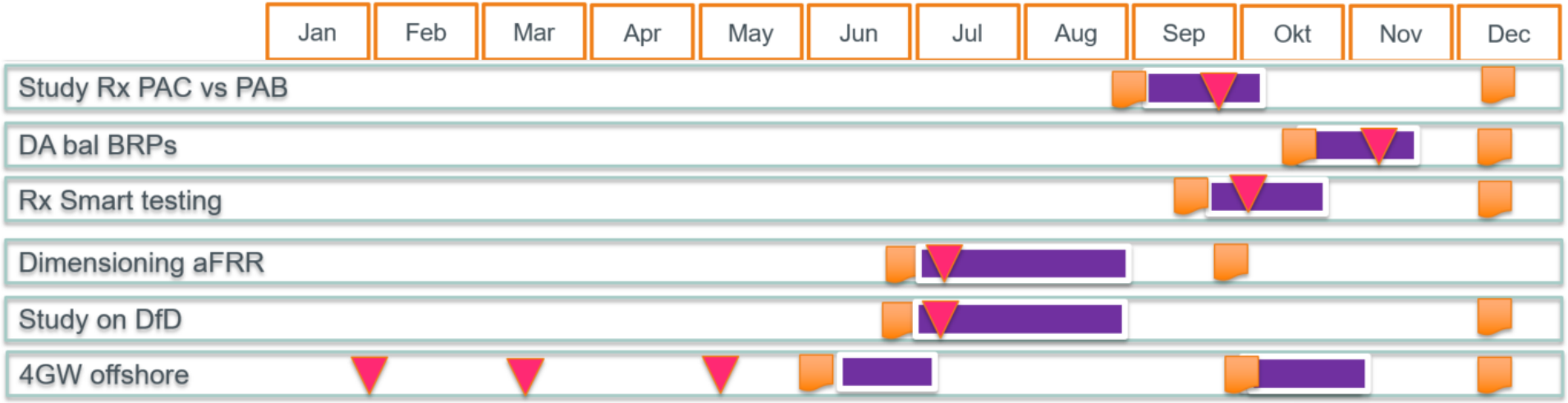


Discretionary incentives

Discretionary incentives

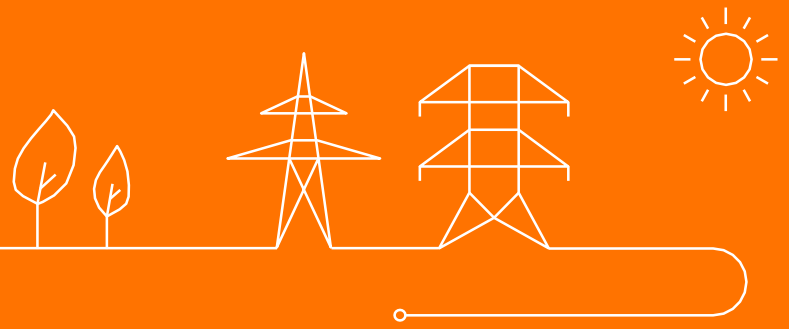
- Remuneration of reserves: Paid-as-bid vs. Paid-as-cleared (deadline 23/12/'20)
- Abolishment or reduction of DA balancing responsibility BRPs (deadline 23/12/'20)
- Smart testing reserve availability (deadline 23/12/'20)
- New Dimensioning methodology aFRR (deadline 30/09/'20)
- Study on solutions/evolutions DfD (deadline 23/12/'20)
- Technical economic study on integration 4GW offshore (deadline 23/12/'20)

Critical study on CORE study on scarcity pricing -> covered by WG System Operation and EU market design



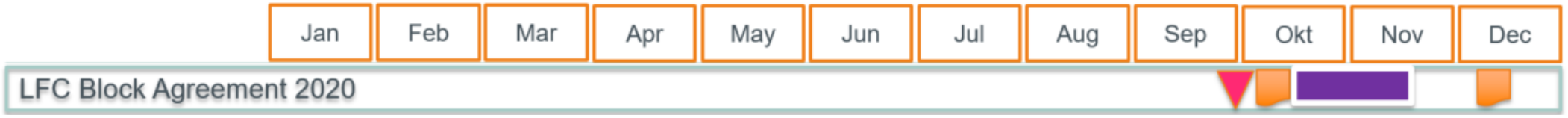
Status other product evolutions

- LFC BOA 2020
- MVAR
- iCAROS



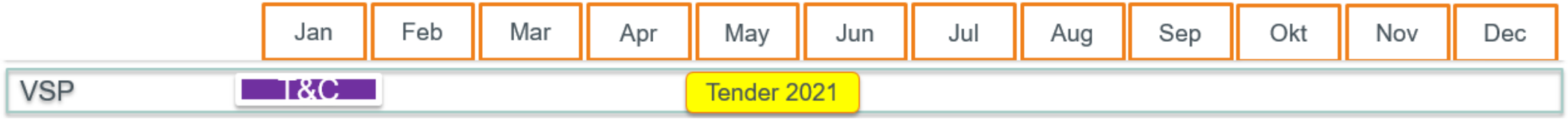
LFC BOA 2020

- End 2020 Elia shall propose a new LFC BOA proposal to the CREG
- Proposal shall contain
  - new dimensioning methodology for the dimensioning of aFRR
  - Elaborated procedures for exceptional operational measures:
    - Exhausted Reserves
    - Escalation Procedure
    - FRSE measures
  - Other topics (if any)



Voltage service provision

- Elia proposed in 2018 a new design for the voltage service
- 2 important design changes
    A. Settlement and tariffs
    B. Evolution to mandatory service with price cap
- Design changes B require a modification of the electricity law (planning uncertain)
- Design changes A will be implemented for 2021



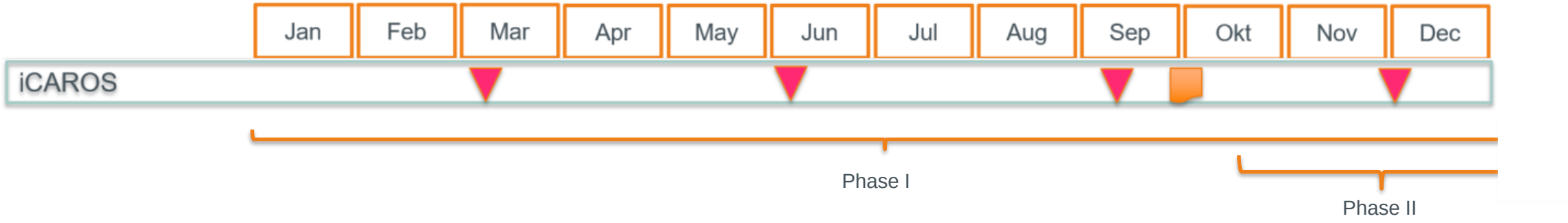
iCAROS

Achievements 2019

- Compliance with SO GL as long as WIN-WIN and in agreement with all stakeholders : first version of T&C OPA, T&C SA & Rules for Coordination and Congestion Management submitted to CREG on 25/10/2019
- Realistic phased implementation of the iCAROS implementation project

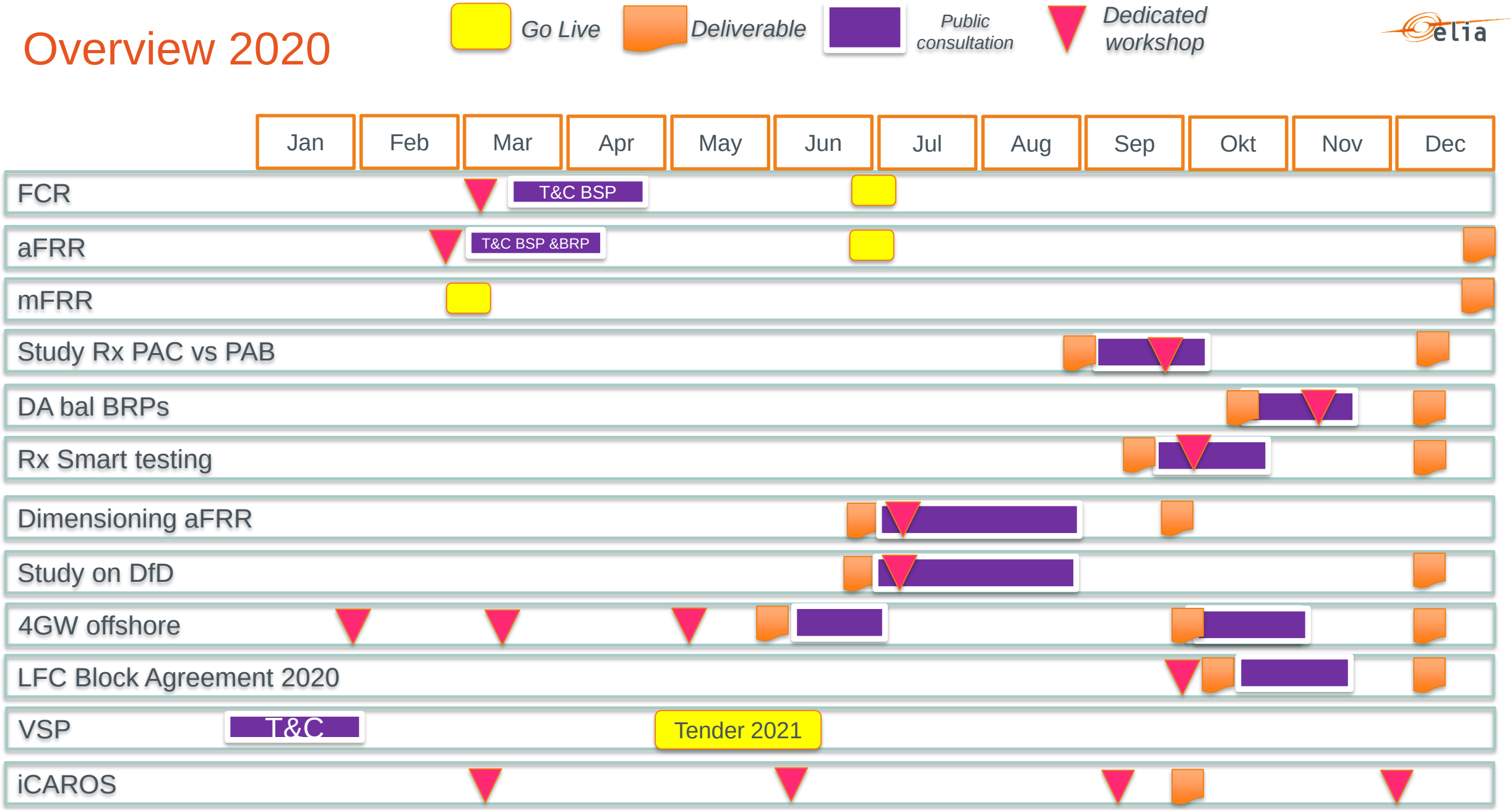
Planning 2020

- *Phase I (finetuning/scoping & start implementation)* : explicit bidding, congestion bids selection & activation, ID scheduling, settlement & control, CRI determination, cost based redispatching & freedom of ID redispatch [target GO LIVE Q1 2022]
- *Phase II (finetuning/scoping)* : Outage planning, scheduling (extension towards DA), settlement & control, integration types B [target GO LIVE Q1 2023]



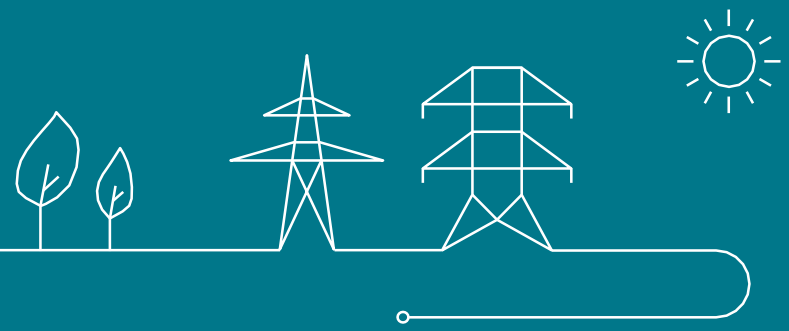
Overview year planning

Overview 2020



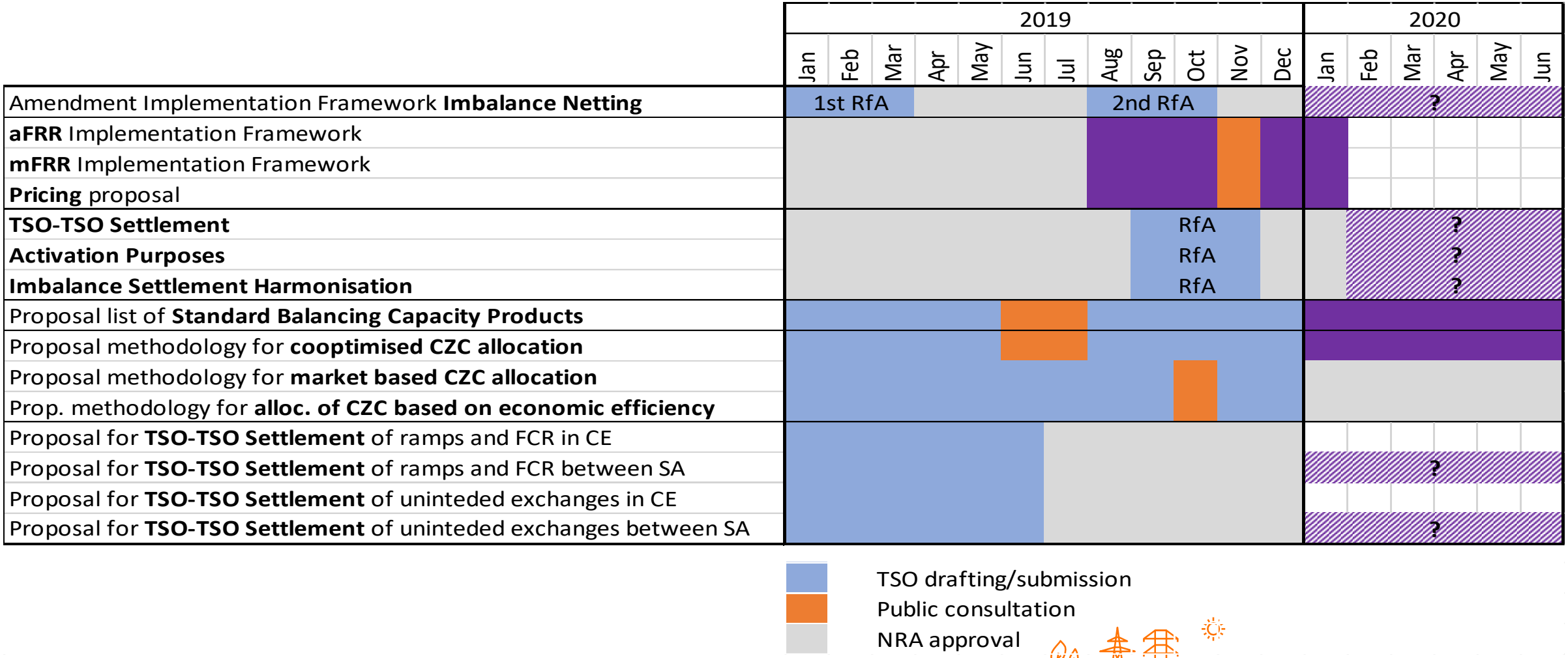
Questions

European integration

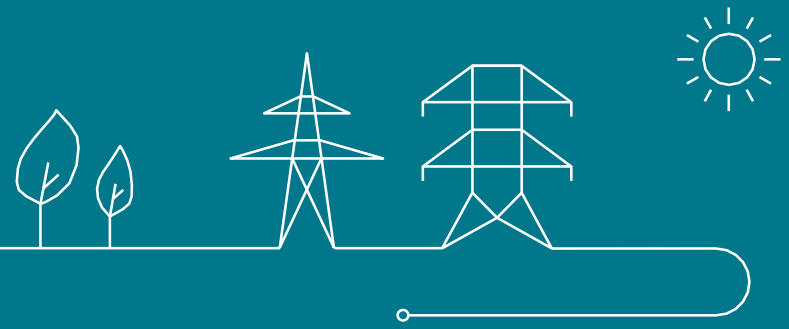


EU balancing: proposals

EUROPEAN UNION



ToE: external audit



Transfer of Energy Audit

An audit by IBM into the Transfer of Energy process for ELIA

Sander van Dam | Lead Consultant/Project manager
Brussel | 27-11-2019

IBM Services

IBM

We have assembled a team with both specific expertise on balancing, flexibility trading as well as general risk & compliance expertise

Sander van Dam BA/MBA - Lead Consultant/Project manager

Sander is Associate Partner at IBM, responsible for Consulting and System Integration in the Belgian Utilities Market. Sander has worked in the energy sector since 1998. He is a well-known expert on liberalized energy markets with international experience in over a dozen European countries, specifically regarding datahubs and wholesale settlement.

Bert Streng RC/EMFC – Senior Management Consultant

Bert is a seasoned IT senior manager. Bert has previously experience with Insurance & Semiconductors business in the compliancy with the legal and regulated frameworks (SII, FATCA, SEPA, GDPR) and data management field. Bert has further a background in worldwide SAP implementations and in business controlling (register controller).

Robert Vrees MSc – Reserve Power Settlement analyst

Robert Vrees is a very talented polyvalent consultant from our Blockchain practice and in the past years has been working for utilities and a number of very significant missions. Robert is great at shaping a vision in early stages, but at the same time a strong project manager, able to deliver the vision in concrete projects. Robert will audit the volume calculations

Jos Roling B Eng Power Engineering – Senior industry consultant

Jos Roling is a seasoned consultant from our global utilities competence center. He ahs consulted at a large number of utilities for decades. Jos is Open Group distinguished architect and has a deep understanding of transmission system operations. Jos Roling is currently engaged in the balancing system innovation at TenneT

Elia and CREG need an independent auditor to assess compliance of ToE implementation with regulation and validity of processes

Regulations

New regulation formalizes transfer of energy for participation of flex in balancing market, with a new role for Elia

- Elia and DSOs are responsible for ToE calculations
- Elia monitors the system for gaming (two identified controls)

Trust

Settlement is based on trust

- Underlying data cannot be shared with Suppliers, BRPs and BSP for reasons of confidentiality
- System Operators need to be trusted to execute regulation faithfully and impartially

Audit

Audit must assure that processes and systems have been designed to properly implement regulation, implemented as they should and that the proper business controls exist

- Report to CREG as controlling entity
- Report to Elia for internal evaluation
- Report to ToE participants

IBM follows a tailored approach to define the norm for easily repeated audits and combine it with advise on process design

There is no pre-existing checklist for the audit like e.g. in ISO 9001 audit, so we have derived one from regulation and delivered it to Elia

- We executed the audit according to the agreed norm through document review, audits and if needed source code review
- For the task of gaming monitoring, we will extend our assessment with a specific analysis of gaming risk

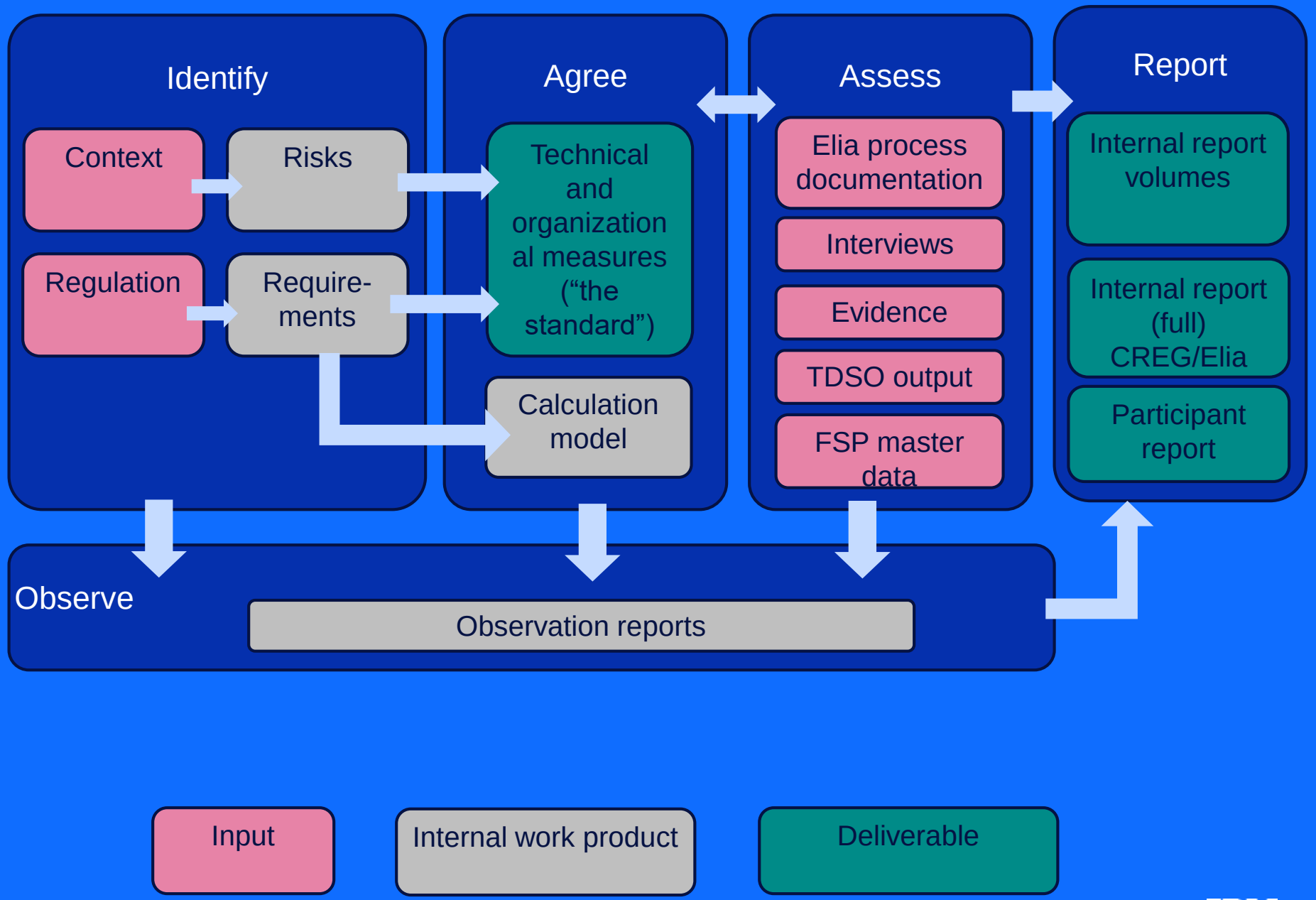
We have assembled a team with both specific expertise on balancing, flexibility trading as well as general experience in risk & compliance audits

Two areas of investigation

- Transfer of Energy primary process
- Market supervision, i.e. detection of market manipulation by Elia

Audit work flow with inputs and outputs

We structured the ToE requirements into a standard for this and future audits. Then we audited Elia and provided a one off expert opinion



Requirements & TOMs in 8 process areas

A. **FSP Qualification**: the area related to all steps involved in the contracting process for FSPs that want to participate in Transfer of Energy;

B. **Delivery Point Qualification**: the area related to the validation of the FSP portfolio used for providing non-CIPU tertiary reserve;

C. **Data Management:** the area related to all process steps involved in the administration of the FSP portfolio and the meter data related to activations that involve Transfer of Energy;

D. **Activation Handling:** the area that relates to all process involved in bids that lead to an actual activation that involve Transfer of Energy;

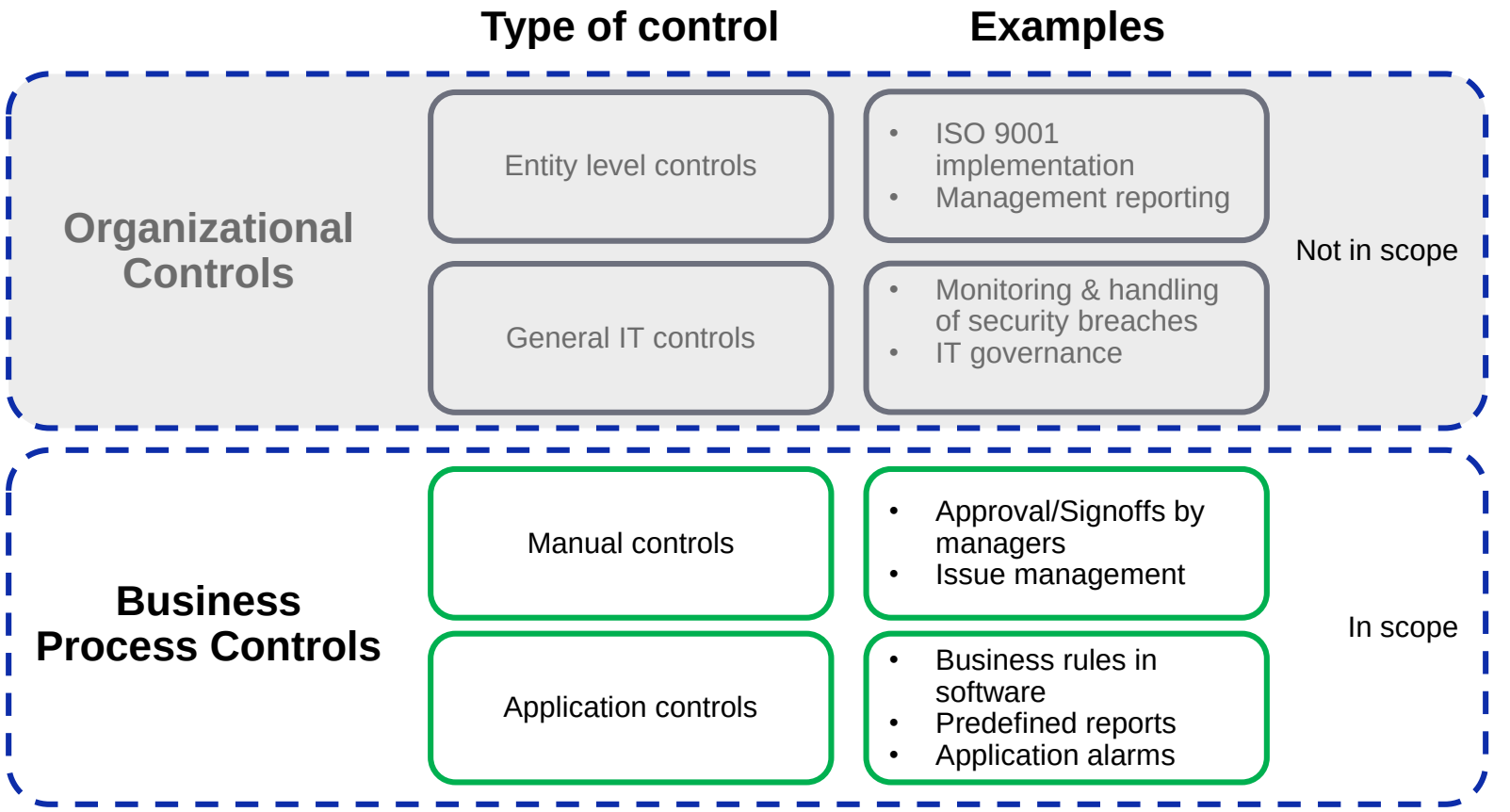
E. **ToE Calculation:** the process area that relates to the calculation of volumes that will be settled between FSPs and Suppliers;

F. **Information exchange:** the area that covers all activities related to the exchange of information between DSOs, Elia, FSPs and Suppliers;

G. **Volume Allocation:** the process area that covers the calculations of impact on the balance of Balance Responsible Parties of FSPs as well as Suppliers involved in Transfer of Energy.

H. **Market Supervision:** the area that covers any activity by Elia to monitor the market with regards to market manipulation.

We limit our scope to ToE specific controls



- Generic controls are assumed to be covered by Elia policies and processes
- Business processes are not all specific for ToE, in which case we will look only for ToE specific controls e.g.:
  - Procurement of Balancing products
  - Activation of reserve power
  - Settlement of reserve power
- Existence of controls is checked
  - In process documentation
  - Through requested proof in selected cases

Last RfIs have been responded to, we have issued a draft report

- We have issued 57 RfIs in total
- Last responses received on May 17
- All assessment work apart from market supervision and gaming is complete

		# of TOMs				
	Process Area's	Identify	Mitigate	Detect	Respond	Recover
A	FSP qualification & contracting	2	2	2	2	2
B	Delivery Point Qualification	4	4	4	4	4
C	Data management	5	5	5	5	3
D	Activation handling	3	1	3	3	0
E	ToE Calculation	8	7	7	4	4
F	Information Exchange	8	3	8	7	5
G	Volume Allocation	4	1	3	4	1
H	Market supervision	1	0	1	1	0
	Totals	35	23	33	30	19

Audit Score										
Identify		Mitigate		Detect		Respond		Recover	
Org	Tech	Org	Tech	Org	Tech	Org	Tech	Org	Tech
2	0	2	0	2	0	2	0	2	0
4	1	4	1	3	3	3	3	4	2
2	3	3	3	1	3	2	2	3	1
2	2	1	0	1	1	2	1	0	0
2	6	1	6	1	5	1	2	1	3
0	8	0	2	3	6	5	2	5	0
1	3	0	1	1	2	0	4	0	1
0	0	0	0	0	0	0	0	0	0
13	23	11	13	12	20	15	14	15	7
36		24		32		29		22	

CONTROLS			
Target	Present	Gap	%
10	10	0	100%
20	20	0	100%
23	21	2	91%
10	9	1	90%
30	28	2	93%
31	29	2	94%
13	13	0	100%
3	N/A	N/A	N/A
140	130	7	

Org:	66

Tech:	77

Observations 1/4

1. Delivery Point Qualification and Data Management processes for MV level connection points are executed by DSOs. There are insufficient process and application controls for Elia to supervise the activity. Since Elia is responsible and accountable and there is no contractual framework for service levels, this is not satisfactory
   - Recommended measures:
     - formalize DSO obligations
     - improve activity monitoring in the TDSO datahub application
2. Elia has no ToE specific controls to see whether submetering data is plausible
   - Recommended measures:
     - implement additional plausibility checks on submeter, with warnings, not errors if submeter curve cannot be matched with head point curve
     - Specify mandatory validation by DGOs/metering companies
3. Elia has an obligation to keep FSP contract data confidential. Even though there are formal NDAs with Elia employees, there is no control to assess who has accessed the data.
   - Recommended measure: create additional logging of data access

Observations 2/4

4. Functionality to positively establish a late FSP notification in a consistent manner is lacking. Elia needs to manually determine whether and how often a FSP has missed a notification deadline. This may lead to arbitrariness in applying the penalty
   - Recommended measure: create a rule in the application that generates a warning for every late or missing notification
5. Data Management for FSP portfolio is detached from the FSP's administration (updates are discussed via email). The risk of data inconsistency is high
   - Recommended measure: allow for data consistency checks by sharing portfolio data in digital form between FSP and Elia.
6. Elia has committed to informing BRPs about activation impact with the exact same time timing (within 3 minutes) as the FSPs are due to report the activation. If the FSP reports at the end of the 3 minute period (which he has an incentive to do as it allows for optimizing the activation after start), Elia cannot fulfill its commitment (and obligation in the code) to the BRP.
   - Recommended measure: allow for a reasonable period to process FSP and input and communication for BRPs

Observations 3/4

7. ToE process is implemented across multiple systems in complex manner in order to have real time notifications to BRPs about portfolio impactToE requires a complex IT solution and a lot of manual work. . This will not scale up to more, smaller units. This cost will grow when volumes grow and seems to be out of balance with the value of the actual activations. Moreover, we think corrections in case of errors are unpractical.
   - Recommended measure: consider a pure ex post implementation of ToE
8. Incidents and problems with the ToE systems and processes are handled in and unstructured manner, relying on email, calendar schedules and individual initiative. The risk is that problems may not handled. Elia management has no structured way of supervising the completeness and timeliness of problem management and task execution
   - Recommended measure: use IT Service Management tooling for handling service requests, periodic tasks, incident and problem management.
   - Recommended measure: redesign the processes and systems to have more automated controls, direct FSP involvement in data management.

Observations 4/4

9. A majority of controls are implemented as organizational controls, only a few controls are implemented as both organizational and technical . The solution will probably not scale with number of transactions and/or number of flex delivery points. It is difficult to manage quality given the large number of unrecorded manual actions that depend on initiative by employees in stead of automated controls
   - Recommended measure: automate more controls in the applications.

Reassessment of ToE in the aFRR market segment

WG Balancing 27th of November 2019

Agenda

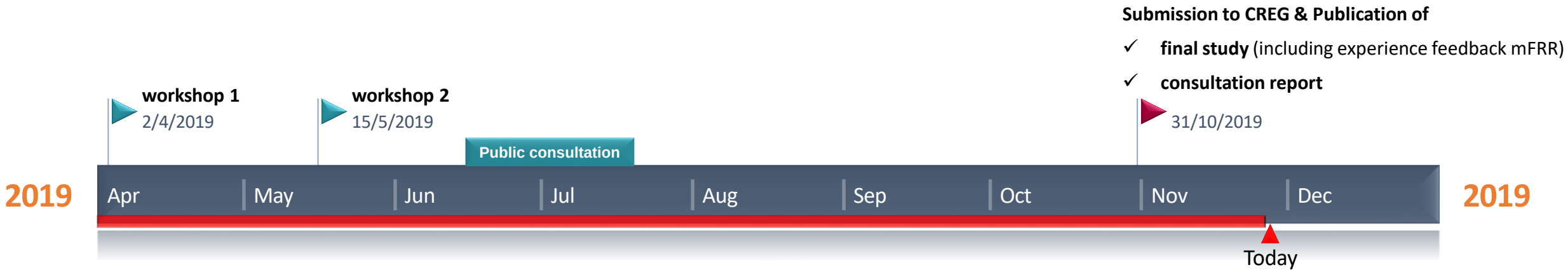
State of play on different projects related to ToE

- ToE in DA/ID
- ToE in aFRR

ToE in DA/ID

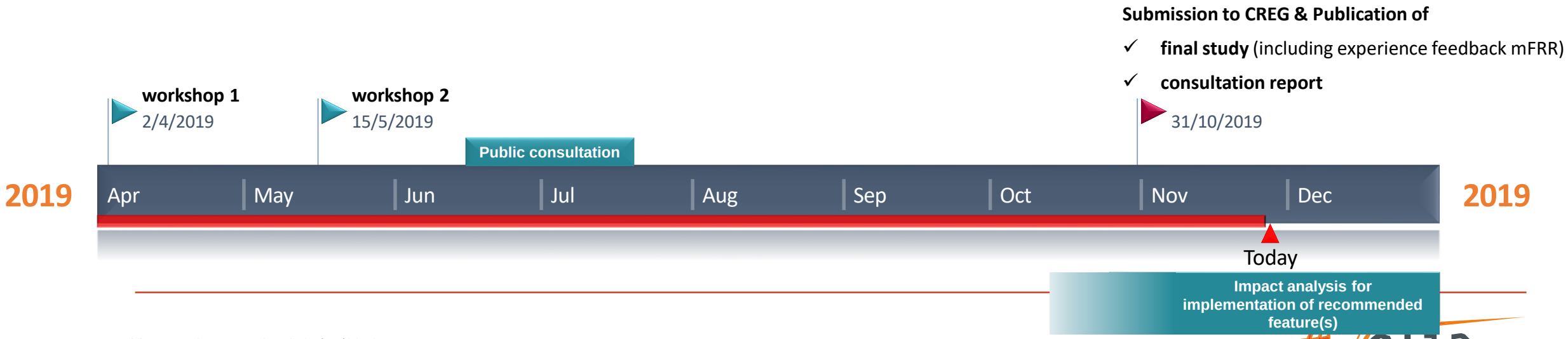
ToE in DA/ID - context and organization of the study

- In the framework of the implementation of ToE in different market segments Elia performed in 2019 a study regarding the design elements and conditions necessary for:
  1. **ToE to the DA/ID** markets
  2. **Combo possibilities DA/ID + bal:** simultaneous participation of one DP to different product activations
  3. **Multiple FSPs** active (simultaneously) on one DP
- The study describes the design elements necessary for the implementation of the above mentioned features
- The technical study is completed by a market study aimed at analyzing the relevance of the implementation of those features based , among others, on experience feedback of mFRR



ToE in DA/ID - recommendations and Next Steps

- The market study concluded with the recommendation to implement ToE in DA/ID
- Detailed final study including design adaptations as well as the consultation report can be found on the website
- Elia is currently analyzing the implementation impact of the recommended feature in order to propose an implementation plan
- Overview of the final design as well as implementation plan will be presented early 2020



ToE in aFRR

Context – aFRR study in 2018:

- In the framework of the “aFRR non CIPU” study, Elia analyzed the necessary design that has to be put in place in order to extend the ToE to the aFRR market segment.
- The economic opportunity of such an extension was also assessed during this exercise
- Following observations and recommendations were presented to the stakeholders :

1. **Technical feasibility :**

   The implementation of ToE for the aFRR market has been described in the study but requires substantial implementations. Correspondingly, such an implementation goes hand in hand with considerable costs and a significant implementation period.

   ⇒ Elia was of the opinion that the cost for implementation needs to be justified with the prospect that this implementation will unlock extra volumes that will develop in the aFRR market

Context – observations and recommendations of the aFRR study

2. Economic opportunity:

a. Volumes of flexibility that need ToE to participate to the aFRR product seem unclear or limited

- Injecting technologies, often with pass-through contracts, accounted for the major part of the volumes that participated to the R2 non-CIPU pilot project in 2017.
- No insights had been provided by market parties concerning the type of assets that will be providing aFRR and their eligibility for the ToE via the questionnaire during the consultation of the design note.
- During the consultation of the aFRR Implementation plan, one party provided information regarding it's estimations of potential in the aFRR market; It appeared that the majority of assets considered in its analysis (even with net-offtake character) where covered by a pass-through contract

b. Market players pleaded for the elaboration of a solution allowing injection point to participate independently from their BRP and supplier

⇒ Based on stakeholder's proposal Elia developed a new "regime" in the ToE rules called Pass-Through

⇒ As requested by stakeholders, this new regime is implemented for all technologies (net-injection & net-offtake) and for all products

⇒ PT regime was widely welcomed by Stakeholders

Context – observations and recommendations of the aFRR study

2. Conclusions and next steps decided in 2018

- ✓ Implement pass-through (ongoing: go live foreseen in Q1 2019 for mFRR and july for aFRR) and
- ✓ Allow ‘sooner’ the participation of non-CIPU assets to the aFRR with the alternative options (opt-out, pass through) as the potential majority of assets that would offer aFRR could find their way with those options
- ✓ Postpone the decision to implement ToE after re-assessment and come back to this question by end 2019

Situation Today:

- The Pass-Through regime is currently under approval process for mFRR and aFRR.
- PT regime is applicable to all (inj/offtake) delivery points under a specific "pass-through supplying contract"
- PT regime does not require the agreement of the BRPsource (as for the ToE regime but even simpler)
- Pass-Through regime provides a solution also for net-injection deliver points

Net-Injection	**Opt-Out *** ➔ mandatory agreement with BRPsource
Net-offtake	**Opt-Out / ToE *** ➔ at least negotiation with BRPsource

	PT supplying contract	No PT supplying contract
Net-Injection	**Pass Through Regime** ➔ No consent of BRPsource	**Opt-Out ***
Net-offtake	**Pass Through regime** ➔ No consent of BRPsource	**Opt-Out / ToE**

Part where ToE could be developed

Solved by PT
According to feedback stakeholders: important part of aFRR providing non cipu assets

- Based on stakeholders' feedback, the PT regime could allow the participation of the major part of the assets that are able to deliver aFRR service.
- The ToE could unlock a remaining part of assets that are "net-offtake", capable and willing to provide aFRR and without PT contract

Situation Today:

Net-Injection	Opt-Out * → mandatory agreement with BRPsource
Net-offtake	Opt-Out / ToE * → at least negotiation with BRPsource

	PT supplying contract	No PT supplying contract
Net-Injection	Pass Through Regime → No consent of BRPsource	Opt-Out *
Net-offtake	Pass Through regime → No consent of BRPsource	Opt-Out / ToE

Part where ToE could be developed

Solved by PT
According to feedback stakeholders: important part of aFRR providing non cipu assets

- At this his moment, still several months before the go live of the aFRR market segment, no new insights have been observed regarding the those specific cases that need ToE
- As far as there is no experience regarding the assets that can participate to aFRR non CIPU and no indication on the share of the volumes blocked without ToE Elia believes that the complex implementation of ToE in aFRR is not justified
- Elia is of the opinion that enough experience (for Elia and for the BSPs) in the aFRR market has to be observed in order to draw lessons on :
  - the type of assets able to provide aFRR (their baseline, their ability to react, to communicate with Elia)
  - the efficiency and usage of the PT regime
  - the assets still blocked and for which the ToE could provide a solution

Elia proposes to proceed together with the involved/interested BSPs & Grid Users on an analysis and evaluation of the above mentioned elements by 1 year after the go live of the aFRR non-CIPU

AOB & Meetings 2020

Publication at Elia's website – Article 12.3 EBGL

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Quarter Hour (CET)	Order	Reserve	Product	Bid Volume (MW)	Bid Price (€/MWh)	Start Price (€/MWh)	Bid + Start Price (€/MWh)
01/11/2019 00:00	1	aFRR	R2	XXX	61,46		61,46
01/11/2019 00:00	1	aFRR	R2	XXX	61,46		61,46
01/11/2019 00:00	1	aFRR	R2	XXX	61,46		61,46
01/11/2019 00:00	2	mFRR	I C	XXX	52,83	0,00	52,83
01/11/2019 00:00	2	mFRR	I C	XXX	65,94	0,00	65,94
01/11/2019 00:00	2	mFRR	I C	XXX	86,79	0,00	86,79
01/11/2019 00:00	2	mFRR	I C	XXX	92,19	0,00	92,19
01/11/2019 00:00	2	mFRR	I C	XXX	92,45	9,30	101,75
01/11/2019 00:00	2	mFRR	I C	XXX	92,45	9,30	101,75
01/11/2019 00:00	2	mFRR	I C	XXX	92,45	9,30	101,75
01/11/2019 00:00	2	mFRR	I C	XXX	92,45	13,89	106,34
01/11/2019 00:00	2	mFRR	I C	XXX	92,45	13,89	106,34
01/11/2019 00:00	2	mFRR	I C	XXX	92,45	13,89	106,34
01/11/2019 00:00	2	mFRR	I C	XXX	120,00	0,00	120,00
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	80,00	55,88	135,88
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	80,00	55,88	135,88
01/11/2019 00:00	2	mFRR	I C	XXX	85,64	66,23	151,87
01/11/2019 00:00	2	mFRR	I C	XXX	85,64	66,23	151,87
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	85,64	73,08	158,72
01/11/2019 00:00	2	mFRR	I C	XXX	85,64	73,08	158,72
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	85,64	73,08	158,72
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	108,88	169,54	278,42
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	114,48	169,54	284,02
01/11/2019 00:00	2	mFRR	I C	XXX	84,14	210,58	294,72
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	84,14	210,58	294,72
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	126,06	210,13	336,19
01/11/2019 00:00	2	mFRR	I C	XXX	132,22	237,29	369,51
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	132,22	237,29	369,51
01/11/2019 00:00	2	mFRR	I C	XXX	330,00	55,88	385,88
01/11/2019 00:00	2	mFRR	I C	XXX	392,60	63,49	456,09
01/11/2019 00:00	2	mFRR	I C	XXX	392,60	114,29	506,89
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	392,60	114,29	506,89
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	392,60	114,29	506,89
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	392,60	114,29	506,89
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	392,60	114,29	506,89
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	392,60	114,29	506,89
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	392,60	114,29	506,89
01/11/2019 00:00	2	mFRR	I C	XXX	392,60	114,29	506,89
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	392,60	114,29	506,89
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	253,74	800,00	1053,74
01/11/2019 00:00	2	mFRR	R3 Standard	XXX	253,74	800,00	1053,74
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	85,64	73,08	158,72
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	250,00		250,00
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	272,00		272,00
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	400,00		400,00
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	900,00		900,00
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	900,00		900,00
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	900,00	55,88	955,88
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	1000,00		1000,00
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	2070,00		2070,00
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	2070,00		2070,00
01/11/2019 00:00	3	mFRR	R3 Flex	XXX	5000,00		5000,00

Publication of two downloadable reports (Incremental and Decremental ARC Merit Order) with all energy bids volumes in MW and prices plus start prices in €/MWh anonymized.

An additional column with "Bid+Start Price" from which the merit order is based in the case of a real activation.

The start price takes into account if the unit is running or not

Publication aligned with already aggregated information published on Available volumes and prices publication:

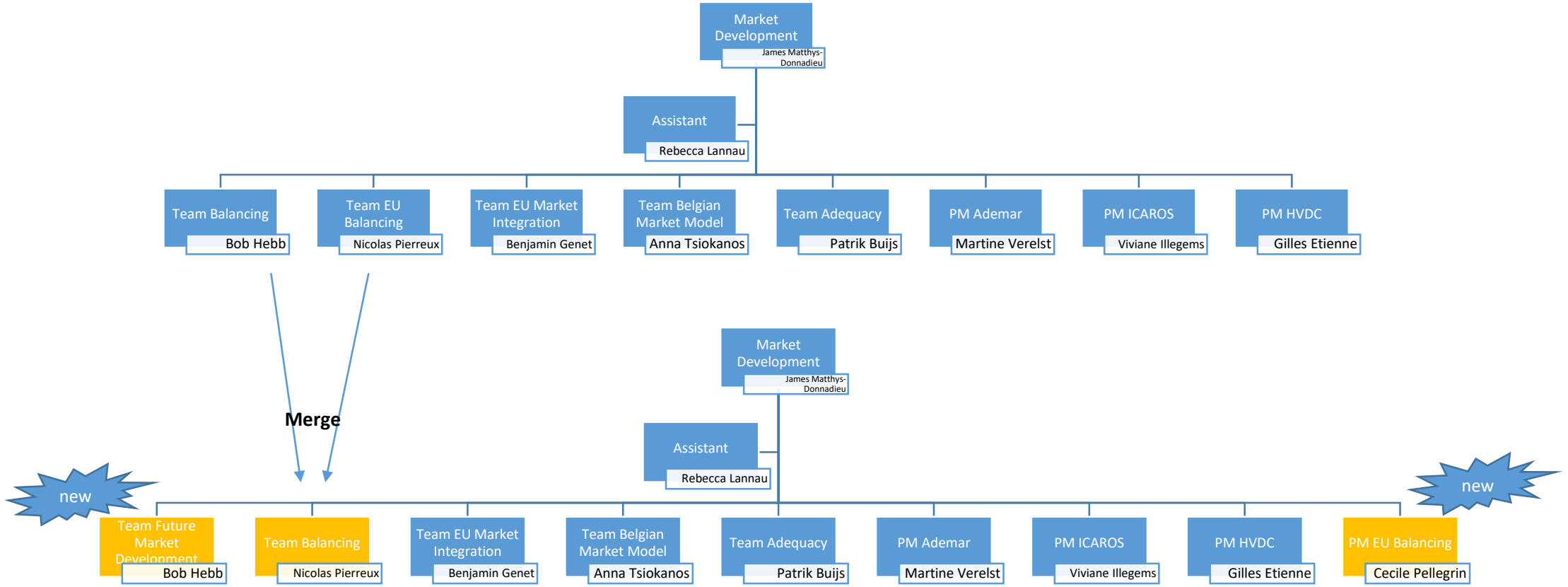
Quarter	Downward regulation						Upward regulation							
	Total [MW]	inter-TSO Export* [MW]	D LC [MW]	D C Energy Limited [MW]	D C [MW]	R2- [MW]	R2+ [MW]	I C [MW]	I C Energy Limited [MW]	R3Std [MW]	R3Flex [MW]	I LC [MW]	inter-TSO Import* [MW]	Total [MW]
00:00 > 00:15	-1.558,6	-250,0	-172,2	0,0	-991,4	-145,0	145,0	524,1	0,0	408,0	436,0	0,0	250,0	1.763,1
00:15 > 00:30	-1.536,8	-250,0	-168,9	0,0	-972,9	-145,0	145,0	331,1	0,0	408,0	436,0	0,0	250,0	1.570,1
00:30 > 00:45	-1.503,3	-250,0	-165,4	0,0	-942,9	-145,0	145,0	371,5	0,0	408,0	436,0	0,0	250,0	1.610,5

Quarter	Marginal prices (€/MWh) for activation of											
	inter-TSO Export* [€/MWh]	D LC [€/MWh]	D C Energy Limited [€/MWh]	D C [€/MWh]	R2- [€/MWh]	R2+ [€/MWh]	I C [€/MWh]	I C Energy Limited [€/MWh]	R3Std [€/MWh]	R3Flex [€/MWh]	I LC [€/MWh]	inter-TSO Import* [€/MWh]
00:00 > 00:15	-273,86	-250,00	0,00	0,00	6,45	61,46	392,60	0,00	392,60	5.000,00		498,00
00:15 > 00:30	-273,86	-250,00	0,00	0,00	6,45	61,46	392,60	0,00	392,60	5.000,00		498,00
00:30 > 00:45	-273,86	-250,00	0,00	0,00	6,45	61,46	392,60	0,00	392,60	5.000,00		498,00

Technical aFRR workshop & Meetings 2020

- Technical aFRR workshop
  - What? Gateway capabilities and requirements
  - When? Wednesday 18 December, 2.30pm to 5pm
  - Where? Elia premises
  - Invitation will be sent this week Thursday
- Meetings in 2020
  - 17th of March, 9.00 am – 12.00 am (meeting to be confirmed)
  - 8th of May, 9.00 am – 12.00 am
  - 19th of June, 9.00 am – 12.00 am
  - Beginning of October: date to be defined
  - End of November: date to be defined

Changes to Market Development organisation



Changes Working Group Balancing

Chairman: **James Matthys-Donnadieu**
Manager: **Bob Hebb => Nicolas Pierreux**
Secretary: **Philippe Magnant => Didier Chim**

Thank you.