USERS' GROUP

elia
| Elia Group

WG Grid

19/02/2025
13:00 – 17:00

WIFI:
Username: usersgroup@elia.be
Password: umnXd9M3

Agenda

| _	Domain	Agenda topic	From	-	Till	Presenter	Time (min)
1	General	Welcome & intro	13:00	-	13:05	*Chairs*	5
2	General	Approval of MoM & status action points	13:05	-	13:10	*Secretary*	5
3	EM	Core IDCC_C first results of EXT // run	13:10	-	13:25	*Catarina Ventura*	15
4	EM	CREG incentive: ID ATC design	13:25	-	13:40	*François Herinckx*	15
5	EM	Core LTCC: way forward	13:40	-	14:00	*Steve Van Campenhout, Bert Dobbelaere*	20
6	EM	30' Gate Closure Time: update	14:00	-	14:20	*Floris Vankrunkelsven*	20
7	EM	Status of discussions on co-optimisation and relaxation of deadline in case of decoupling	14:20	-	14:35	*Jean-Michel Reghem*	15
8	EM	Workshop on EU Congestion Management toolkit	14:35	-	14:45	*Steve Van Campenhout*	10
	BREAK		14:45		15:00	BREAK	15
9	SSD	CREG incentive: CRI monitoring	15:00	-	15:15	*Christophe Lallemand*	15
10	SSD	iCAROS: feedback on the informal consultation T&C SA - REX iCAROS phase 1 & release 1 iCAROS phase 2 + Design clarification: simultaneous signal of Return to Schedule (RTS and FCR in opposite direction)	15:15	-	15:45	*Viviane Illegems, Raphaël Dufour*	30
11	SSD	GUFlex: status project and way forward	15:45	-	16:05	*Antoine Weynants*	20
12	SSD	MVAr: status project and way forward	16:05	-	16:15	*Alexandre-Amaury Nève*	10
13	O	NCC Annual Report 2024	16:15	-	16:45	*Kristof Geens*	30
14	O	Solar Eclipse dd.29/03/2025	16:45	-	16:55	*Kristof Geens*	10
15	General	AOB & conclusions	16:55	-	17:00	*Secretary*	5
						Total	**4:00**

Approval of Minutes & Action points

- Approval of the Minutes of Grid WG of 12/12/2024

- Status of Action points

Action	Responsible	Date Raised	Due date	Status
Elia to present topics on co-optimisation and decoupling for a next Grid WG.	Elia	04/10/2024	/	**Open**

European Markets
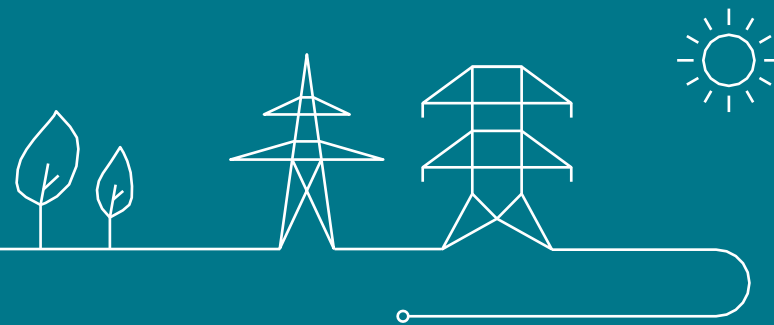
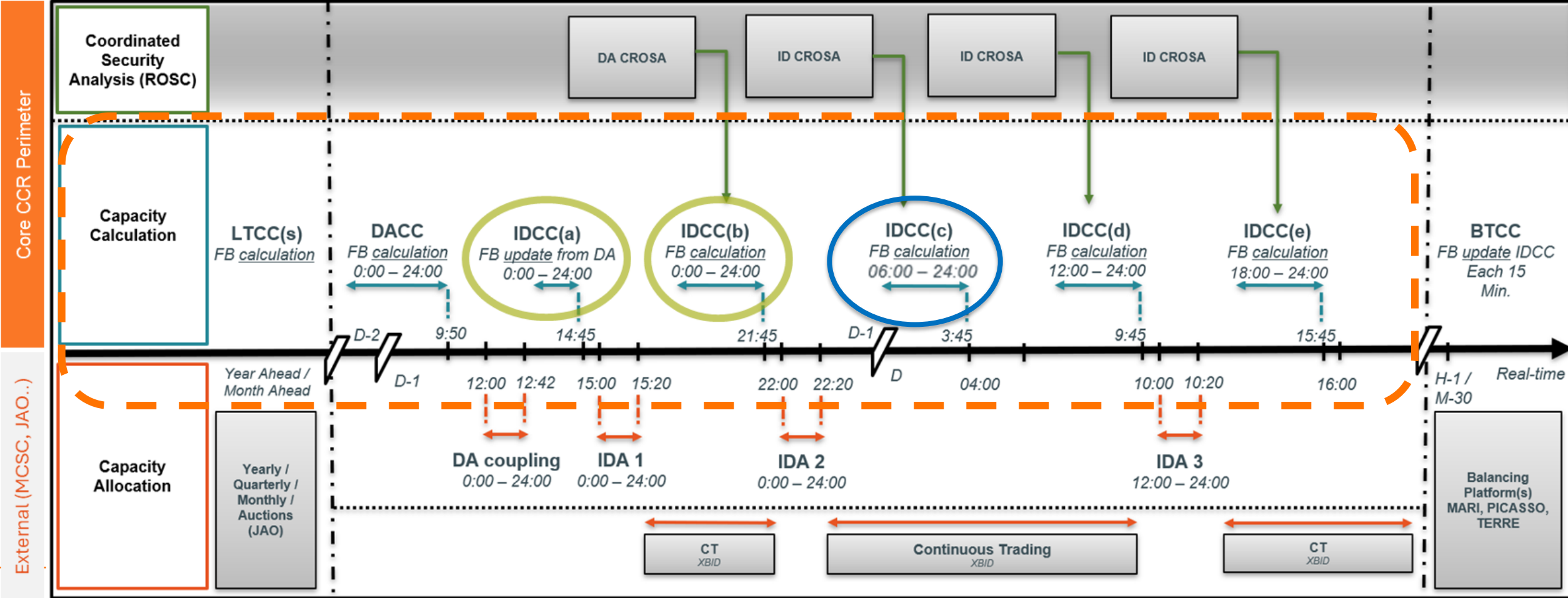# Core IDCC_C first results of EXT // run

European Markets

Catarina Ventura

Introduction & Reminder – Target Model for Core region – Location IDCC(c)

Starting from Day-Ahead Timeframe, a repetitive loop from Capacity Calculation, to Allocation and afterwards Security Analysis starts.

Introduction & Reminder – Characteristics of Core IDCC runs + Foreseen Go-Live

Capacity Calculation step	Grid Model (CGM) used	The capacity is used by	Capacity is delivered to the SIDC (XBID) at	Capacity can be used for markets from... to...	Go-live of the IDCC
IDCC (a)	D2CF	IDA1 + CT	D-1 14:45	0-24	June 24
IDCC (b)	DACF	IDA2 + CT	D-1 21:45	0-24	May 24
IDCC (c)	**IDCF (02:30)**	**CT**	**04:30**	**6-24**	**June 25**
IDCC (d)	IDCF (07:30)	IDA3 + CT	09:45	12-24	March 26
IDCC (e)	IDCF (13:30)	CT	15:45	18-24	2027 (tentative)

IDCC: Intraday Capacity Calculation   **CGM : Common grid model**
SIDC : Single Intraday Coupling   **D2CF : D-2 Congestion forecast**
IDA : Intraday Allocation   **DACF : Day Ahead Congestion Forecast**
CT : Continuous Trading   **IDCF : Intraday Congestion Forecast**

IDCC(c) first results and process stability

The external parallel run of IDCC(c) **successfully started as of 17/12/2024. Process stability is under control** with 92% of business days successfully completed until **02/02/2025**.
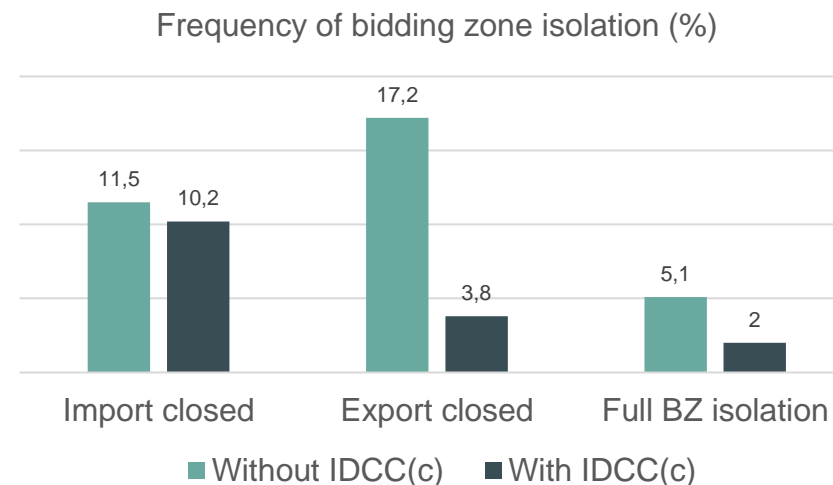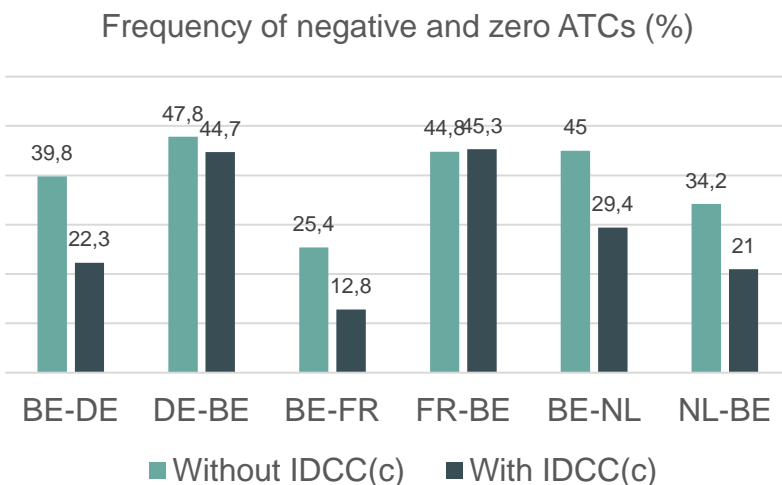
Main take-aways:

- **Decrease of isolation** of the Belgian bidding zone. Using a more recent grid model reduces the level of pre-congestions

- Lower mean positive ATCs for most Core bidding zone borders

The following graphs illustrate the impact of IDCC(c)

Frequency of negative and zero ATCs across all border directions	
Frequency of bidding zone isolation in import, export and both directions	Compare the available cross-zonal capacities at ~4:30 with and without IDCC(c).
Mean positive ATCs	
Top pre-congested CNEs	Compare which grid elements are pre-congesting the Belgian borders and how frequent this happens: the situation at ~21:45 thus the end of IDCC(b) is compared with the situation at ~4:30 thus the end of IDCC(c)

Disclaimer: The results since the start of the parallel run are impacted due to incorrect AACs calculation. BE-DE border is not impacted. BE-FR and BE-NL are impacted.

IDCC(c) reduces bidding zone isolation for Belgium

Frequency of negative and zero ATCs (%)

BE-DE: 39,8 / 22,3
DE-BE: 47,8 / 44,7
BE-FR: 25,4 / 12,8
FR-BE: 44,8 / 45,3
BE-NL: 45 / 29,4
NL-BE: 34,2 / 21

■ Without IDCC(c) ■ With IDCC(c)

Frequency of bidding zone isolation (%)

Import closed: 11,5 / 10,2
Export closed: 17,2 / 3,8
Full BZ isolation: 5,1 / 2

■ Without IDCC(c) ■ With IDCC(c)

Bidding zone isolation reflects the impossibility from the BZ to trade in either import, export or both directions

- Overall, less negative and zero ATCs, and bidding zone isolation occur after IDCC(c) run takes place.

- BE border directions account for a decrease of ~10% of the negative and zero ATCs, mainly for the export direction with a decrease of limited flow exchanges towards FR, DE and NL bidding zones.

IDCC(c) reduces the level of pre-congestion on the Belgian borders

Outcome of IDCC(b)

NE_Name	TSO	BE>DE	BE>FR	BE>NL	DE>BE	FR>BE	NL>BE	Across borders
ALEGRO	ELIA - AMP - AL	15.4%			19.0%			34.4%
MEE DRT2	TTN			27.9%	27.9%	0.4%		27.9%
MEE DRT3	TTN			27.7%	27.7%	0.4%		27.7%
Daxlanden - Maximiliansau GOLDGR O	AMP-TNG	25.7%	25.7%					25.7%
Creys - Saint-Vulbas 2	RTE					15.3%		15.3%
Creys - Saint-Vulbas 1	RTE					14.5%		14.5%
Meppen - Y Niederlangen	AMP-TTG						13.5%	13.5%
Lambsheim - Maximiliansau WEINST O	AMP	12.8%	12.8%					12.8%
Doerpen West - Meppen EMSLD WB	AMP-TTG						12.0%	12.0%
Ensdorf - Vigy VIGY2 S	AMP-RTE	0.2%		11.5%		11.5%		11.5%

Outcome of IDCC(c)

NE_Name	TSO	BE>DE	BE>FR	BE>NL	DE>BE	FR>BE	NL>BE	Across borders
ALEGRO	ELIA - AMP - AL	12.2%			14.9%			27.1%
MEE DRT2	TTN			22.4%	22.4%	22.4%		22.4%
Creys - Saint-Vulbas 2	RTE					14.9%		14.9%
Creys - Saint-Vulbas 1	RTE					14.1%		14.1%
Daxlanden - Maximiliansau GOLDGR O	AMP-TNG	5.2%	5.2%					5.2%
Ensdorf - Vigy VIGY2 S	AMP-RTE			2.5%	3.5%	5.1%		5.1%
Meppen - Y Niederlangen	AMP-TTG				0.2%		2.4%	2.7%
Lambsheim - Maximiliansau WEINST O	AMP	2.4%	2.4%					2.4%
Doerpen West - Meppen EMSLD WB	AMP-TTG						1.9%	1.9%

Disclaimer: For ALEGrO it means that capacity on the ALEGrO interconnector has been fully used by the market previously. The ALEGrO interconnector itself does not create a pre-congestion for the other borders

The measure considered to indicate pre-congestions is the frequency the CNE is congesting a border direction.

- Example: Ensdorf – Vigy is congesting the BE-DE border 0.2% of the time over the full period assessed, 11.5% of the time the BE-NL and FR-BE border directions. The overall frequency of congestion of this CNE on the BE borders is 11.5%, i.e. the timestamps of congestion for the 3 borders occur at the same time.

The top pre-congested CNEs impacting the BE borders demonstrate that

- One CNE, PST 3 at substation Meeden in the Netherlands, no longer limits the exchanges

- The remaining CNEs congest the borders less often after the IDCC(c) run.

IDCC(c) mitigates the pre-congestions identified in IDCC(b), i.e. turning negative ATCs into smaller positive ones. This effect could decrease the overall mean positive ATCs across all borders.

IDCC(c) leads to a lower average positive ATC
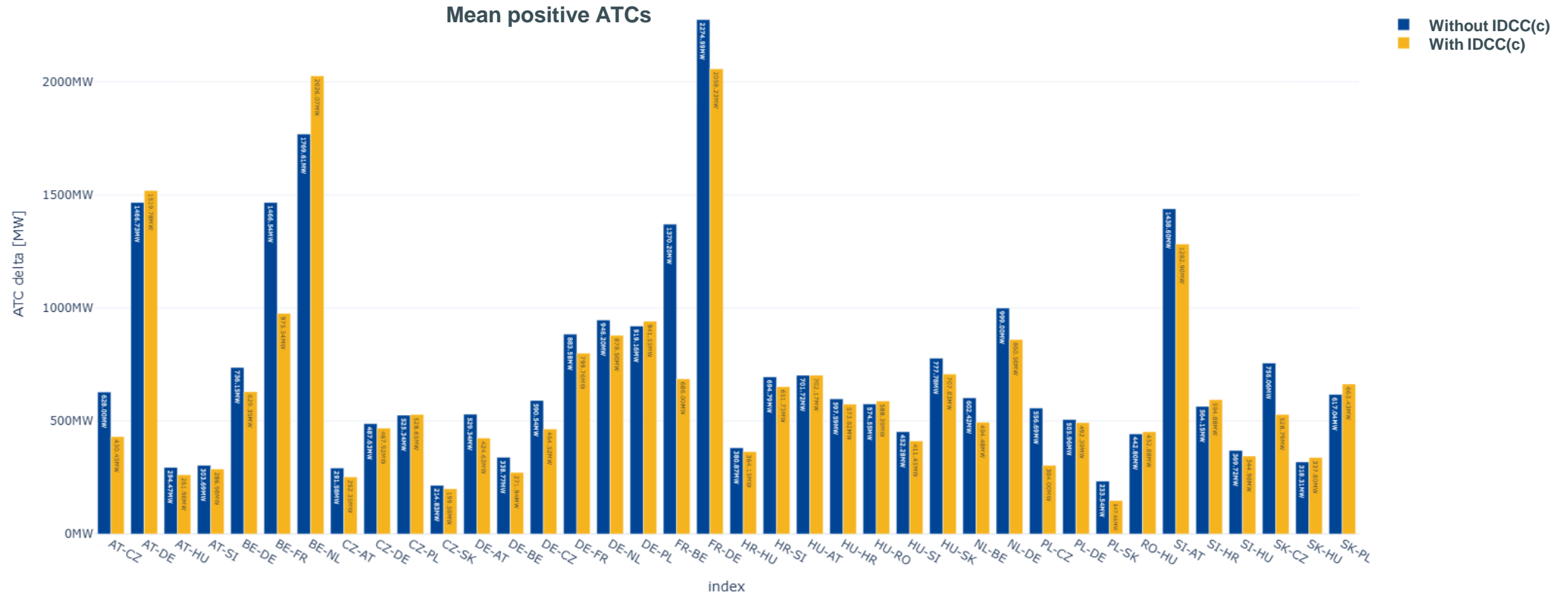
Mean positive ATCs

Possible reasons to explain the decrease of mean positive ATCs:

- A general decrease of negative ATCs and of bidding zone isolation, inherently means reopening more often border directions at IDCC(c) run, which were closed during IDCC(b) for longer periods. This necessarily decreases the ID ATC levels on other borders (those who would be used if the considered borders were not reopened). Instead of less often open border directions, these are more often open with in general a bit less ID ATCs everywhere.

- Since there are less negative RAMs, there are more CNECs that could be limiting for all Core borders (i.e. turning negative ATCs into small positive ATCs).

CREG incentive: ID ATC design update

European Markets

François Herinckx

Today's CREG ID ATC incentive methodology

De CREG voorziet in een gewogen som die hun respectieve waarden voor de markt en voor het systeem in het algemeen weergeeft. Uitgaande van de veronderstelling dat de capaciteiten die in D-1 om 22u00 (voor de 24 uur van D tussen 0u en 24u) en in D om 10u00 (voor de 12 uren van D tussen 12u tot 24u van dag D) beschikbaar worden gesteld, het meest interessant zijn voor de markt, stelt de CREG de volgende formule voor:

$$V\_ID\_ATC = (12*V\_ID\_ATC\_3pm + 24* V\_ID\_ATC\_22pm + 12* V\_ID\_ATC\ 10am)/48$$

Context

- In 2024 CREG introduced an incentive for ID ATC (in addition to the DA minRAM one already in place), on the three Belgian Core borders.

- Since the IDCC go-live (May 2024), ID ATC are updated several times over the day, meaning that a relative importance of each IDCC run was agreed upon. The current rationale is to grant IDCC(a) a weight of 0.5 for its computed hours, and to grant all other IDCC runs a weight of 1 for their computed hours – see extract above.

- So far, with only two IDCC runs, the formula to compute Elia's performance boils down to: $V_{ID\ ATC} = (1/3)*V_{IDCC(a)} + (2/3)*V_{IDCC(b)}$

Update of the methodology is needed

- When the ID incentive was designed, IDCC(c) and IDCC(e) were not foreseen. An update is necessary to take these two additional ATC updates into account, and to agree upon the importance of the five IDCC runs relative to one another for the overall ID ATC incentive performance.

Today's objective: explain Elia's proposition for IDCC relative weights*, and to gather market parties' feedback on the underlying principles.

* The term 'relative weight', or 'relative importance', refers to how much the performance of each IDCC run weigh onto the Elia's incentive score. It is not about the performance of these IDCC runs themselves, which of course depend on the level of provided ATC, but how much each IDCC run contribute to Elia's score.

Today's CREG ID ATC incentive methodology

De CREG voorziet in een gewogen som die hun respectieve waarden voor de markt en voor het systeem in het algemeen weergeeft. Uitgaande van de veronderstelling dat de capaciteiten die in D-1 om 22u00 (voor de 24 uur van D tussen 0u en 24u) en in D om 10u00 (voor de 12 uren van D tussen 12u tot 24u van dag D) beschikbaar worden gesteld, het meest interessant zijn voor de markt, stelt de CREG de volgende formule voor:

$$V\_ID\_ATC = (12*V\_ID\_ATC\_3pm + 24* V\_ID\_ATC\_22pm + 12* V\_ID\_ATC\ 10am)/48$$

Status quo

- Applying the current design principle to the five IDCC runs* results in the relative importances on the right-hand side.

- In the target model, IDCC(d) and (e) (IDCC(c) too to some extent) have low relative importance.

- On the one hand this is logical as they cover less delivery hours than previous runs. On the other hand, this is illogical because it does not consider the fact that ID capacity is used the most by market parties closer to delivery.

Current

	00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 24:00			00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 24:00	Relative importance
IDCC_A	0,5	0,5	0,5	0,5		IDCC_A	33%	33%	33%	33%	33%
IDCC_B	1	1	1	1		IDCC_B	67%	67%	67%	67%	67%
IDCC_C						IDCC_C					
IDCC_D						IDCC_D					
IDCC_E						IDCC_E					
	1,5	1,5	1,5	1,5			100%	100%	100%	100%	100%

After IDCC_C go-live

	00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 24:00			00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 24:00	Relative importance
IDCC_A	0,5	0,5	0,5	0,5		IDCC_A	33%	20%	20%	20%	23%
IDCC_B	1	1	1	1		IDCC_B	67%	40%	40%	40%	47%
IDCC_C		1	1	1		IDCC_C		40%	40%	40%	30%
IDCC_D						IDCC_D					
IDCC_E						IDCC_E					
	1,5	2,5	2,5	2,5			100%	100%	100%	100%	100%

After IDCC_D go-live

	00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 24:00			00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 24:00	Relative importance
IDCC_A	0,5	0,5	0,5	0,5		IDCC_A	33%	20%	14%	14%	20%
IDCC_B	1	1	1	1		IDCC_B	67%	40%	29%	29%	41%
IDCC_C		1	1	1		IDCC_C		40%	29%	29%	24%
IDCC_D			1	1		IDCC_D			29%	29%	14%
IDCC_E						IDCC_E					
	1,5	2,5	3,5	3,5			100%	100%	100%	100%	100%

Target Model

	00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 24:00			00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 24:00	Relative importance
IDCC_A	0,5	0,5	0,5	0,5		IDCC_A	33%	20%	14%	11%	20%
IDCC_B	1	1	1	1		IDCC_B	67%	40%	29%	22%	39%
IDCC_C		1	1	1		IDCC_C		40%	29%	22%	23%
IDCC_D			1	1		IDCC_D			29%	22%	13%
IDCC_E				1		IDCC_E				22%	6%
	1,5	2,5	3,5	4,5			100%	100%	100%	100%	100%

* 0.5 weight for IDCC(a), 1 weight for all other IDCC runs

Elia's proposal

As the philosophy of the incentive is to motivate Elia to develop CC processes in a way that is most valuable to the market, Elia proposes the following rationale:
- **To give higher weights to ATC updates closer to delivery time** → representative of the value to the market.
- **To compute the weights based on historical ID trades data** → objective and transparent.

Example: IDCC(b) relative weight for delivery period 12h-18h equals *the traded volumes with delivery 12h-18h that used IDCC(b) ATC* (i.e. executed between 22h D-1 and 4h30 D) divided by *the total traded volumes with delivery period 12h-14h* (i.e. executed between 15h D-1 and 16h45 D).

NB: the proposition requires further refinement. For example, it should avoid that IDCC runs with low ATC values get a low weight because the lack of ATC makes XB ID trades impossible (i.e. self-fulfilling prophecy) → e.g. applying some floor?

IDCC Sharing Keys

IDCC window	00h-06h	06h-12h	12h-18h	18h-24h	Total
IDCC_a	9.38%	2.27%	1.18%	0.62%	2.55%
IDCC_b	90.62%	26.15%	5.16%	3.38%	22.94%
IDCC_c		71.58%	93.66%	96.01%	74.51%
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

IDCC Sharing Keys

IDCC window	00h-06h	06h-12h	12h-18h	18h-24h	Total
IDCC_a	9.38%	2.27%	1.18%	0.62%	2.55%
IDCC_b	90.62%	26.15%	5.16%	3.38%	22.94%
IDCC_c		71.58%	19.34%	4.36%	26.01%
IDCC_d			74.32%	36.79%	34.26%
IDCC_e				54.85%	14.24%
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Disclaimer: the numbers above are part of a PoC built upon historical ID market data that are not complete. Therefore, they are not to be taken as fully representative, and they are displayed as illustration of the principle only.

Market parties' opinions on the way forward

Next steps

At this stage, the aim is the gather market parties' feedback on the principles to define the relative weight of each IDCC run, and therefore to determine the way forward for the ID incentive design.

The questions hereunder help do so.

- *Do you agree with the idea to give more weight to IDCC updates that are closer to real-time?*

- *Do you support the proposition to compute the weights based on historical ID market data?*

- *For you as a market party, how valuable are IDCC(a) ATCs for your trading activities? Does the value of IDCC(a) ATCs change after 15' MTU go-live in DA? How important is IDCC(a) relative to the subsequent IDCC updates?*

Intraday incentive - update needed

Current assumptions for updating weighting factors :

1. Every MTU has the same total weighting (1/24)

2. Every relevant ID capacity calculation round is considered (IDCC a/b/c/d/e)

3. Weighting factors reflect the market value

4. Weighting factors provide incentives to Elia for improvement

5. Note: In total, tuning should result in predefined % remuneration in BaU

Feedback from market parties?

Example with rule-of-thumb sharing keys (same for penalties negative ATC):

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
IDCC A	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
IDCC B	75%	75%	75%	75%	75%	75%	25%	25%	25%	25%	25%	25%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
IDCC C							50%	50%	50%	50%	50%	50%	20%	20%	20%	20%	20%	20%	5%	5%	5%	5%	5%	5%
IDCC D													50%	50%	50%	50%	50%	50%	15%	15%	15%	15%	15%	15%
IDCC E																			50%	50%	50%	50%	50%	50%
total weight	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Reminder – Concluded high level design for ID ATC incentive in 2022

Hourly ID ATC incentive Performance(s)*

+60% X

Result ID ATC BE - bidding zone level = 100% - % h BE BZ isolated *2 - % h BE BZ limited capacities

With:
- BE BZ isolated = TRUE if max (sum positive X=>BE ATCs, sum positive BE=>X ATCs) **< 500 MW****
- BE BZ limited capacities = TRUE if max (sum positive X=>BE ATCs, sum positive BE=>X ATCs) **< 1500 MW**

+40% X

Result ID ATC BE - border level = 100 % - % h BE-NL closed - % h BE-FR closed - % h BE-DE border closed

With:
- With X border closed = TRUE if max(ID ATC X=>BE, ID ATC BE=>X) **< 250 MW**

-15% X

Frequency of Negative ATCs on BE borders = %h (min (ATC ID X=>BE, ATC ID BE=>X) **<0 MW**

* in case of multiple ID ATC provisions throughout the day, weights will be applied
- ID_ATC performance = (12*V_ID_ATC_3pm + 24* V_ID_ATC_22pm + 12* V_ID_ATC 10am) / 48

** The BE BZ isolated threshold will be yearly increased with **50 MW** (i.e. 550 MW in 2025, 600 MW in 2026 etc.)

Core LTCC: way forward

European Markets

Steve Van Campenhout, Bert Dobbelaere

Transition to flow-based capacity calculation and allocation is happening

Objective today: explain approach for 2025 and 2026 – first simulation results with ATC extraction
Core CG Mar 11: roadmap + more simulation results

Core TSOs are fully committed to implement scenario-based **flow-based capacity calculation for flow-based allocation by Nov 2026** thus for the 2027 yearly and monthly auctions.

In addition, the ambition of Core TSOs is to enable an **earlier go-live of LTCC, in Nov 25, by proposing to add temporarily an ATC extraction step (subject to NRA approval)** to the scenario-based flow-based capacity calculation process
- This provides coordinated capacities as input to NTC allocation on all Core borders
- This set-up would apply to the 2026 yearly and monthly auctions

Next steps
- **Regulatory approval** is required for this temporary solution through an amendment of the Core LT CCM. Core TSOs are preparing this amendment. The consultation will be launched at the end Feb / begin Mar.
- **Demonstrate to NRAs the feasibility** of this plan and the fact that it does not endanger the go-live of flow-based allocation in Nov 26.
- Continue the investigation on measures to **improve the capacities in the flow-based** domain in close alignment with NRAs and ACER
- **In case an amendment is required to improve the capacities** for FB implementation by Nov 26, **prepare the amendment process in mid 2025**

Scenario-based FB approach with ATC extraction
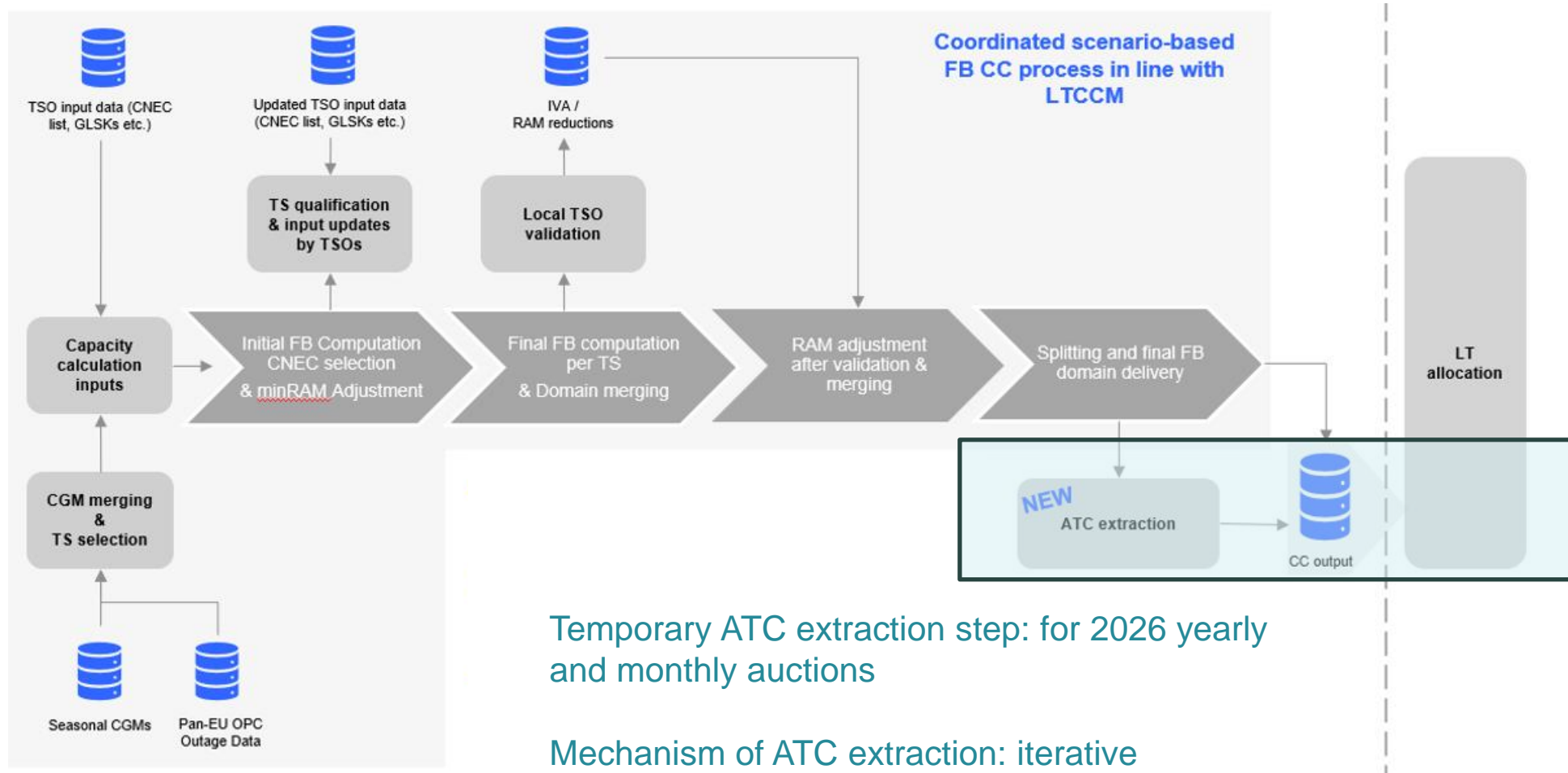
Temporary ATC extraction step: for 2026 yearly and monthly auctions

Mechanism of ATC extraction: iterative approach from intraday capacity calculation

Measures to improve capacities of the flow-based domain

Different approaches are being investigated

- Parametrization within degrees of freedom in the LT CCM

- Amendment of the LT CCM

- Removal of LTA inclusion in DA/ID capacity calculation

Degrees of freedom in the LT CCM

- Collective mandatory minRAM setting up to 40% yearly and 20% monthly

  - Reminder: minimum setting is 20% yearly and 10% monthly

  - Going beyond these levels would require an amendment

- Individual, voluntary minRAM setting on top of collective minRAM setting

- Grid model: removal of outages

The measures may evolve between an eventual go-live of the ATC extraction step in Nov '25 and the go-live of flow-based allocation Nov' 26.

Elia position on the measures to improve capacities

Key words: simplify – consistency towards target model – stability

Removal of LTA inclusion is a key enabler

- Removes the link with operational security and thus the main driver for individual validation. This mitigates the effect that measures to increase capacity are offset by more intense reductions during individual validation

- Shift nature of the discussion from 'physical/operational security' to 'financial'

- Decreases complexity of operational processes, benefitting the performance of the Euphemia for day-ahead allocation

- Note: LTA inclusion was introduced in a context without minimum capacity requirements in day-ahead capacity allocation. This context changed completely with the implementation of the min. 70% requirement

Removal of outages from the grid model is a powerful measure

- Reduces the criticality of the minRAM parameter

    - With planned outages the base case quality is too low ➔ the minRAM parameter has in first place to compensate this

    - When removing outages ➔ the minRAM parameter has a smaller gap to cover

- Increases stability of the results

- Removes a layer of complexity re. HVDC interconnectors: specific rules needed to avoid planned outages leading to 0 capacity

Simulation results: first view on available capacities under ATC extraction

Benchmark to define what are 'sufficient' capacities

- The benchmark is set by historically offered LT volumes

    - In the current context - our view on the target model is to determine volume for hedging based on DA parameters

    - Exception: DE-AT and PL borders

- Both a *border-by-border view* and a *total view* are relevant to assess the effect of measures to improve capacities

    - Under ATC extraction feeding NTC allocation the border-by-border view is the direct output of the capacity calculation

    - Under pure FB capacity calculation feeding flow-based allocation, there is no border view coming out of capacity calculation

Description of the scenarios

- Based on 2024 grid models

- MinRAM levels: 20% & 40%

- Results after application of splitting rule (80/20)

- OPI = Outage Planning Included

- NMFT = standard seasonal reference grid models (no outage planning included), both peak & off-peak models are used

- NMFT Peak only = standard seasonal reference grid models (no outage planning included), only peak models is used

Disclaimer: without application of individual validation

Simulation results for ATC extraction: total capacity in the Core region

2024 yearly computation results - Sum of ATCs per scenario
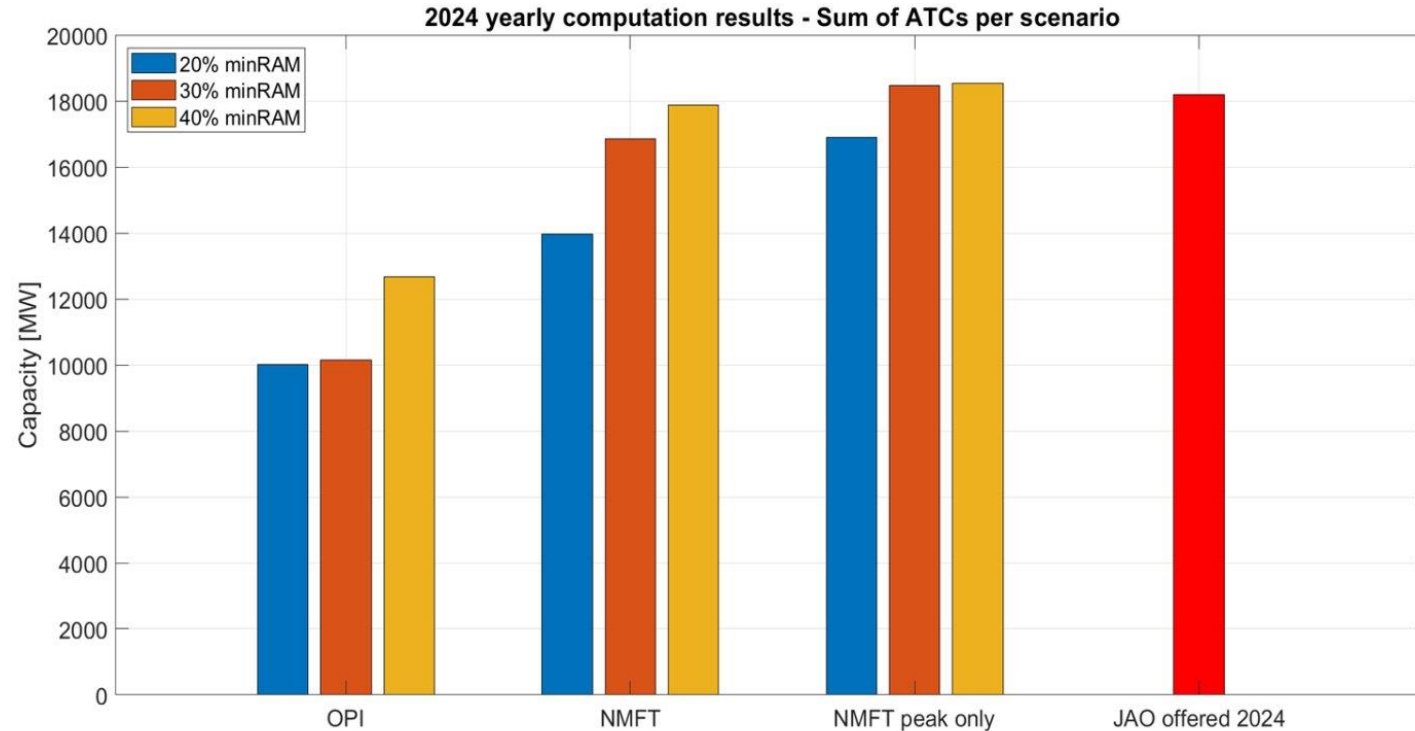
Significant capacity increase by removing outages. Capacities increases through higher minRAM settings, yet the effect fades out when using grid models without outages.

The combination of both delivers close-to-historical values.

Note: the total capacity is divided over more borders compared to historical JAO 2024 capacities as LTTRs are also issued on the Polish borders with a go-live of Core LTCC

Simulation results for ATC extraction: capacity on individual Belgian CORE borders

Border	JAO offered ATCs 2024	[LTCC] ATC OPI 20% with splitting	[LTCC] ATC OPI 40% with splitting	[LTCC] ATC NMFT 20% with splitting	[LTCC] ATC NMFT 40% with splitting	[LTCC] ATC NMFT 20% peak with splitting	[LTCC] ATC NMFT 40% peak with splitting
BEtoDE	260	613	320	799	453	608	420
BEtoFR	250	348	380	589	594	622	627
BEtoNL	473	394	475	446	789	480	704
DEtoBE	260	244	243	215	230	206	280
FRtoBE	1600	1083	971	1555	1494	2213	1360
NLtoBE	473	165	279	247	403	263	432

Significant impact of removing outages – higher impact than increasing minRAM

Higher minRAM setting lead to an overall higher ATC for the CORE region, see previous slide, but not necessarily on individual borders. A different level of minRAM can indeed lead to a different optimal distribution in the ATC extraction algorithm.

30' Intraday Gate Closure Time: update

European Markets

Floris Vankrunkelsven

Introduction

Cross border trading up to 30' before Real Time – Why?

Regulatory perspective - EMD reform ([link](#)):

- "From 01/01/2026 ID cross-zonal gate closure time shall not be more than 30 min ahead of real time."
- TSOs can request derogation at NRA until 2029 and 2031, accompanied by an impact assessment and an action plan.
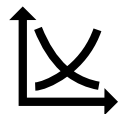
Market perspective:

- Access to (more liquid) XB markets closer to real time.
- …

Operational perspective:

- Reduced balancing needs
- Reduced incompressibility risks
- …

Introduction
Where are we today?

Local level:

- Impact assessment of local directly impacted operational processes and tools done
    - For Scheduling Agent however, further impact analysis is still required
- Preparation of corresponding implementation ongoing

Regional and MCSC level:

- Coordination between TSOs
- Border by border approach: a border can only Go Live when TSOs on both sides are ready
- Coordination with NEMOs

Introduction

Where are we today?

EMDR Art. 8: 1st derogation period

EMDR Art. 8: 2nd derogation period

Timeline:

2024		2025				2026	2027		2029		2031
Q3 24	Q4 24	Q1 25	Q2 25	Q3 25	Q4 25						

◆ **EMDR Initial Go Live 01/01/2026**

Local level

Initial impact analysis done

High level analysis locally ◆

Detailed analysis and requirements

Local implementation

Regional level

Regional discussion

Balancing platform mitigation measures
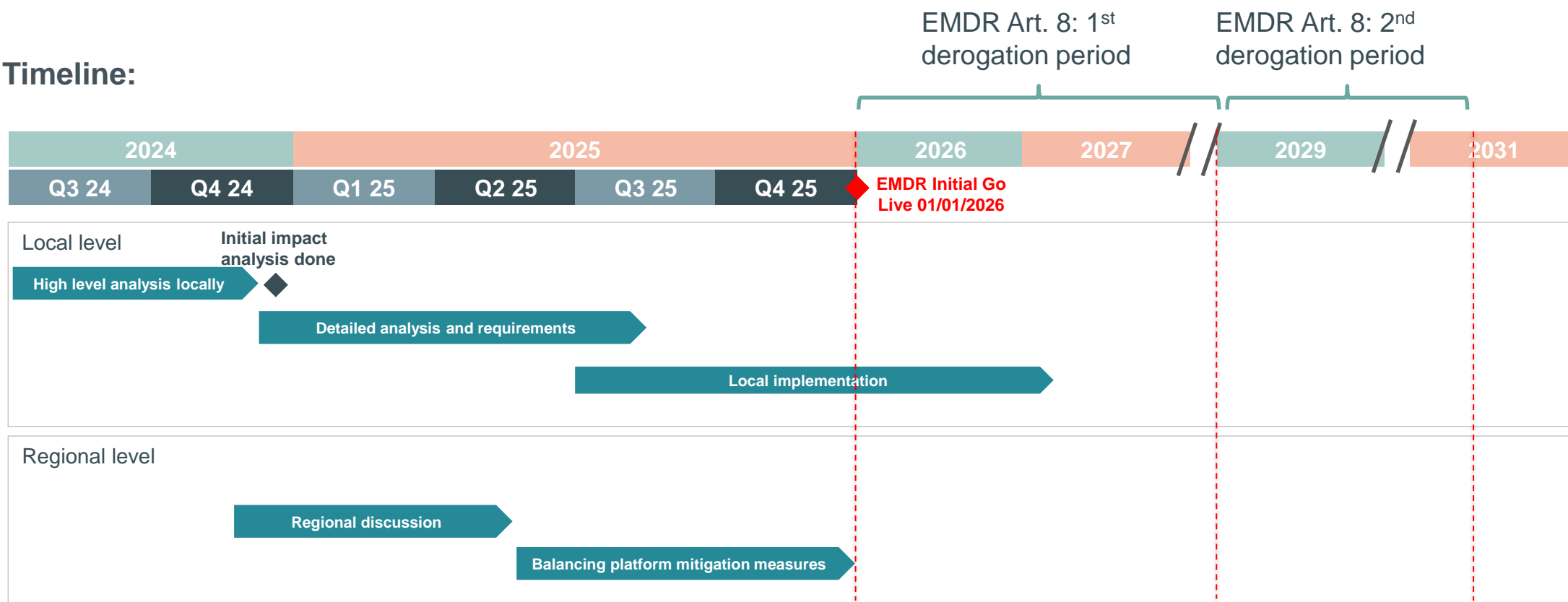
Elia internal assessment
Overall impact analysis and planning

Considering the reduced time available for:

- Cross-border Nominations and matching processes with other TSOs
- Security analysis
- Congestion management
- Balancing capacity calculation for cross-border balancing platforms

Considering:

- Elia and market parties still adjusting to new reality after iCAROS phase 1 and PICASSO
- Upcoming Go Lives: MARI and 15' MTU in SDAC
- Existing no regret implementations in the backlog

> **Subject to <u>further detailed analysis</u>, Elia <u>aims</u> to develop a Minimum Viable Product solution to facilitate 30' ID GCT Go Live readiness on Belgian borders by <u>Q1 2027</u>**

Elia internal assessment
High level action plan

Prerequisite	Action	Timing
Improved nomination and matching process and downstream processes to unburden operations	Improvement of existing process and tooling Align process with neighbouring TSO	Readiness by Q3 2026
Automated security analysis from hourly to quarter hourly frequency	Significant rework of existing PowerFactory tooling Analysis of quick wins for the process and coding already done	Focus on first phase to deliver MVP by Q1 2027, part of longer track for future proofing security analysis
Move Scheduling Agent RD GCT of T-45' for modification of schedules and RD bids towards T-30'	Exact planning for revision, consultation and approval of relevant regulated documents (T&C SA, etc …) still to be evaluated, taking into account other evolutions.	Strong link with PowerFactory prerequisite
Solution for tight timings for direct activations by MARI	New design and fallbacks under review	Strong link with nomination and matching process

Elia internal assessment
Next steps

Derogation process:

1. Intention to request derogation already shared with CREG, and today also with market parties.
   Elia aims to request a limited and justified derogation, instead of using the full first derogation window until 2029.
2. Impact analysis and action plan will be subject to a public consultation
3. Submission of derogation request to CREG before summer followed by decision by CREG

Other impact:

- In-depth analysis of the impact on the scheduling agent design, operational processes, tools and documents (T&Cs SA, etc…), subject to public consultation and to be approved by all Belgian NRAs
- Elia – NEMOs Intraday Post-Coupling agreement to be updated
- Local implementation tracks
- Readiness of other neighboring TSOs and sequential go-live windows planning at SIDC level

Status of discussions on co-optimization, relaxation of deadline in case of decoupling and 15min

European Markets

Jean-Michel Reghem

Co-optimization - Status

- <u>Present situation</u>

    - **Energy** cleared in the day-ahead market (SDAC)

    - **Balancing capacity** procured by TSOs on a (mainly) national basis

- Co-optimisation implies **simultaneous** clearing of energy and balancing capacity in SDAC

- <u>Why </u>(Advantage "on paper")?

    - Procurement of balancing capacity will be cheaper in some bidding zones and more expensive in others

    - As for other commodities, trade will reduce costs → more competition

    - Energy and balancing capacity compete for the same resources: supply capacity and cross-zonal capacity

    - Simultaneous clearing provides an opportunity to obtain the optimal allocation of these resources, without the need to use price forecasts (ideally)

- <u>Legal Basis</u>

    - Energy Balancing Guideline (EBGL), Article 40, obliges TSOs to develop a proposal for a methodology for a co-optimised allocation process of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves

    - EBGL, Article 41, allows TSOs to develop   a proposal for a methodology for a market-based allocation process of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves

    - With a (sequential) market-based process, balancing capacity is procured by the TSOs before gate-closure of SDAC. Such a solution is presently in operation in the Nordics

Co-optimization – Recent developments

- 25 November 2022: ACER letter to NEMOs requesting the **amendment of the algorithm methodology** for the inclusion of co-optimisation

- February 2024: **Workshop in Oslo** with participation from NEMOs, TSOs, academics and ACER to gain better understanding of co-optimisation

- 23 November 2023: **NEMOs submit an updated version** of the "Methodology for the price coupling algorithm, the continuous trading matching algorithm and the intraday auction algorithm" (Algorithm Methodology), which takes into account implementation of co-optimisation

- June 2024: ACER releases study "**Welfare Benefits** of Co-Optimising Energy and Reserves" and considers this proof that co-optimisation is economically superior to other solutions for procurement of balancing capacity
  — NEMOs, TSOs and many market participants **did not share this view** and have requested more in-depth CBAs.

- September 2024: **Workshop** in Ljubljana

- 23 September 2024: ACER Decision 11/24 on **amendments to the price coupling algorithm** and the continuous trading matching algorithm, including the common sets of requirements
  — Updated version of the Algorithm Methodology
  — Only (relevant) changes are in Articles 4.15, 4.16, defining an **R&D program** for co-optimisation

Co-optimization - Status

First report "R0" of R&D Stream under finalization before MCSC approval and consultation with MPs.
Too early for detailed analysis → Status presented today

- MCSC SDAC NEMOs and TSOs, in cooperation with ENTSO-E, organized on 19/12/2024 an **online workshop** with

  Market Participants on Co-optimisation R&D (recording available here).
  - Workshop material can be found on [ENTSO-E] website
  - Q&A document can be found on [ENTSO-E] website

- The workshop delivered insights on:
  - High-level overview of key design challenges of the co-optimised markets researched in the current R&D phase
  - Outcomes from the informal survey (organized from 07/10-06/11) on the future use of the co-optimised balancing capacity and energy markets
  - Planned R&D phases and next steps

- **Main takeaways:** Shown **increased interest in the mechanics of co-optimised markets, product offering, bidding structures and connection to current balancing platforms**

Next steps

- 24/01: NEMO & TSO physical workshop focused on R0 report preparation

- March 2025: Intermediate sharing of R0 with ACER and dedicated interaction

- 31/03: **Formal deadline for delivery of R0 report** in line with the Algorithm methodology

- Q2 2025: **Public consultation of the report and explanatory note**

- September 2025: R1 report delivery (with incorporated feedback and full scope coverage) - Planning to be confirmed

Co-optimization – R&D Program

a. product design which captures intertemporal and cross-product dependencies between SDAC and SPBC; b. bid design which properly reflects at least variable and fixed costs; c. determination of clearing prices for day-ahead energy and SPBC;	**Phase 1** "R0": 30.03.25 Consultation "R1": 30.09.25
d. compatibility of 'COOPT' requirements and functionalities with the requirements laid down in the SO Regulation; e. compatibility of 'COOPT' requirements and functionalities with the requirements and functionalities denoted as 'EXISTING' in Annex 1 to this Algorithm methodology; f. where the coordinated net transfer capacity approach applies, the possibility to allow cross-zonal capacity allocated to the day-ahead energy market to free up additional capacity for the exchange of balancing capacity or sharing of reserves, when this would allow to maximise the economic surplus;	**Phase 2** "R2": 31.05.26
g. curtailment procedures; h. back-up and fallback procedures for both day-ahead energy and balancing capacity; and i. bid information exchanges and governance of operation activities between NEMOs and TSOs, including data governance.	**Phase 3** "R3": 30.11.26

Co-optimization - Status

Several stages of R&D are planned before any implementation once confirmed:
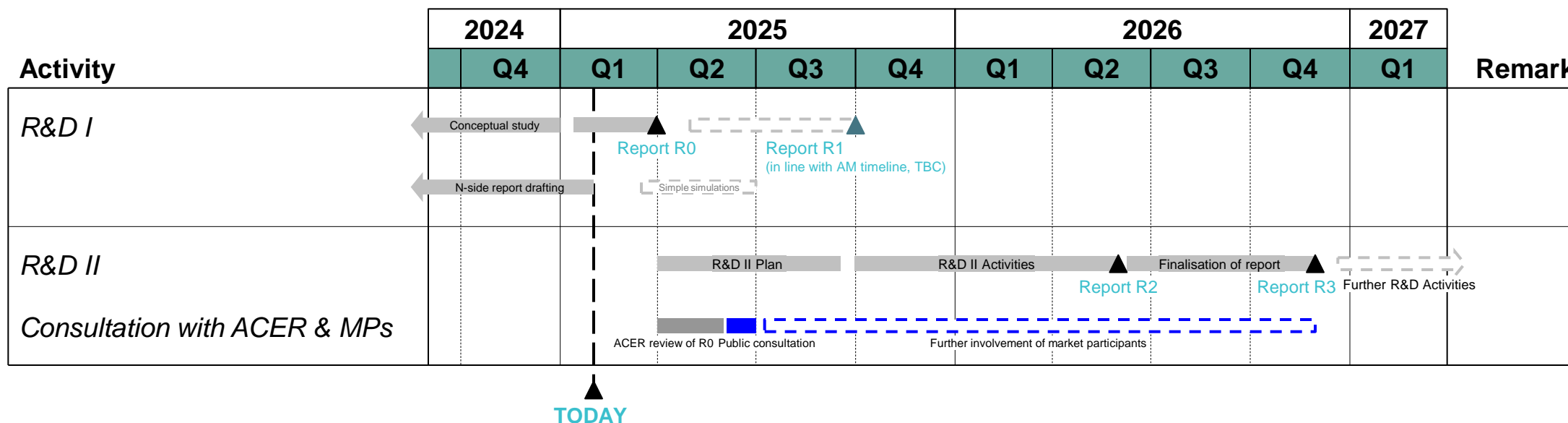
R&D II: Compatibility with SO regulation and existing SDAC requirements, freeing up of additional exchange capacity for balancing and sharing of reserves for the NTC method, curtailment procedures

R&D III: Backup and fallback procedures, bid information exchanges and governance

Relaxation of nomination deadline in case of decoupling

- NEMOs and Market parties suggested to relax the 15:30 nomination deadline in case of decoupling

- Following Partial decoupling of EPEX and OTE in June and July 2024, TSOs, NEMOs and ACER entered a process of several workshops "mitigation measures for improving decoupling process".

- 15:30 nomination deadline is part of these mitigations (but not only) which focus on
  - Decrease Decoupling likelihood
    - Additional / more efficient use of time
    - More robust process design (backup, fallback, communication …)
  - Minimise decoupling impact
    - Avoid multiple DA prices per bidding zone (partial decoupling/full decoupling case)
    - Case of no DA prices
  - CACM 2.0 improvements and/or short term implementations

- First workshop on 1/10/2024 followed by multiple discussions and alignment at TSOs and NEMOs' level

- Second workshop on 4/02/2025 focusing on decrease decoupling likelihood.

- Next workshop in April.

Relaxation of nomination deadline in case of decoupling

- Current status in relation to nomination deadline

- All TSOs' position:

  - 15:30 nomination deadline cannot be moved generally or in case of potential decoupling, due to system security risks.

  - Other gains could be achieved in the process by moving GCT earlier than 12:00 or replace shadow auctions by other fallbacks.

  - Main reason of this position is linked to DACF process creation, coordinated security analysis, Intraday capacity calculation, upcoming additional time needed for ROSC, time needed for scheduling process and PEVF …

- Elia position:

  - Current nomination deadline is 14:30 and could be postponed up to 15:30 in case of delay in SDAC process in line with BRP contract.

  - Operationally, postponing DA nomination deadline to 16:00 in exceptional situation could still be acceptable, allowing to dedicate more time to SDAC coupling process

- Next steps:

  - All TSOs (entso-e): To provide to ACER more information about their assessment on possibilities and risk concerning the 15:30 deadline

  - MCSC TSOs and NEMOS to continue to work together on the assessments of the mitigation measures/new fallbacks in order to minimize decoupling impacts (and avoid such decouplings)

15min resolution status

Status of the 15 min MTU implementation on Belgian borders:

- On 22 January 2024, the switch of BE-FR from 30 to 15min resolution in intraday (IDCT and IDA) was successful. Next steps are Nordics, Spain and Poland borders in March 2024

Status of the 15 min MTU implementation in SDAC

▪ On 19 December 2024, MCSC [NEMOs] and [TSOs] have announced the new go-live date for the 15-minute MTU implementation which is set on 11 June 2025 (delivery date 12 June).

▪ Since the last info on 10 December 2024, European functional testing has progressed according to the plan. FIT (functional) testing is planned to be completed on 31/01 and SIT (procedural) testing to start on 03/02 (validation will be confirmed on Friday 31/01).

▪ Central member tests will proceed in early April 2025. Local member tests are planned by each NEMO and will start earlier.

▪ MCCG 14/02/2025 workshop on alignment and information between TSOs/NEMOs and MPs on 15min DA

Timeline
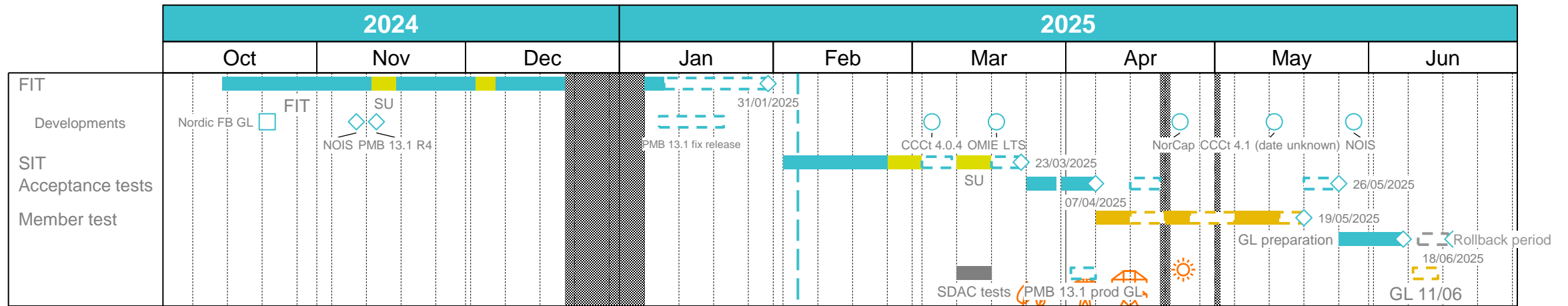
Workshop on EU Congestion Management toolkit

European Markets

Steve Van Campenhout

Aligning markets with physics is pivotal against the backdrop of increasing RES penetration

A successful delivery on the policy targets to maximize the use of interconnection and to avoid undue discrimination requires a review of the EU congestion management toolkit, to address following challenges:

1. **Growing importance of liquidity in intraday and balancing timeframe. At the same time enforcing minimum 70% cross-zonal capacity in the operational processes induces risks and inefficiencies:**
   - Regulation requires TSOs to coordinate the use of remedial actions, also close-to-real time and in real-time, when these remedial actions have a cross-border impact
   - Regulation does not foresee a regional (=CCR)-wide coordination process after closure of the Intraday market for the evaluation and activation of remedial actions. Feasibility is highly questionable given the very short time window

2. **BZ reconfiguration remains an essential tool. At the same time:**
   - Decisions on bidding zone reconfiguration are taken on political level
   - There is a need for a sufficiently forward-looking approach
   - Congestion patterns will become more dynamic. This requires additional solutions to efficiently manage frequently occurring congestion of temporary nature

A workshop will be organized later in 2025 to sharpen the problem statement and identify tentative ways forward. This to prepare for fundamental debates cf. by June 2026 EC is to carry out an assessment on the current structure and functioning of the short-term electricity markets.

Approach: open exchange between Elia, CREG and Market Parties. Outcome processed into a working paper.

System Services Design
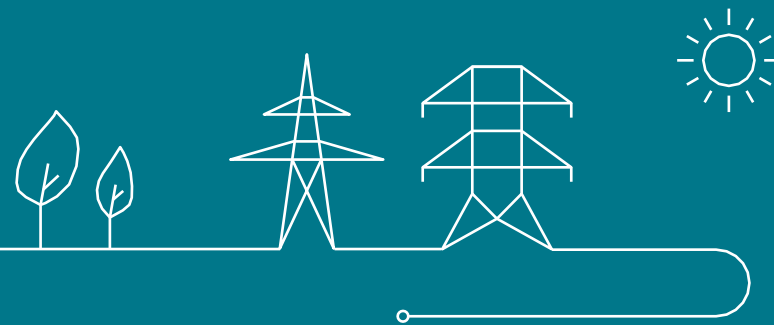
CREG incentive: CRI monitoring

System Services Design

Dries Van der Biest, Martin Funck, Christophe Lallemand

CRI incentive objective → 'justify imposed restrictions'

- **CRI = Congestion Risk Indicator**

- **Context : Elia CRI process has market impact which triggers a <u>need for transparency</u>**

- **Objective of the incentive** → Elia to share KPIs allowing :

  1. **The CREG to monitor the CRI process**

  2. **Market Parties to understand and acknowledge the rationale of the CRI process**

  3. **Elia to enhance the process to minimize market interference**

- CRI impacts for MP, Elia Grid and Balancing teams depending on time horizon : (mFFR perspective)

Stakeholder	Before RT (D-1 till RT)	In RT
MP and Elia Balancing	- High CRI zones → **balancing bids blocked** - Medium CRI zones → **balancing bids limited**	- In High and Medium CRI zones, Return to Schedule applies → **no reactive balancing**
Elia Grid Congestion	- Calculated margin per zone gives a **signal** of network constraint and **RD needs**	- In High and Medium CRI zones, schedules can only go in the '**more secure**' grid direction

CRI incentive timeline
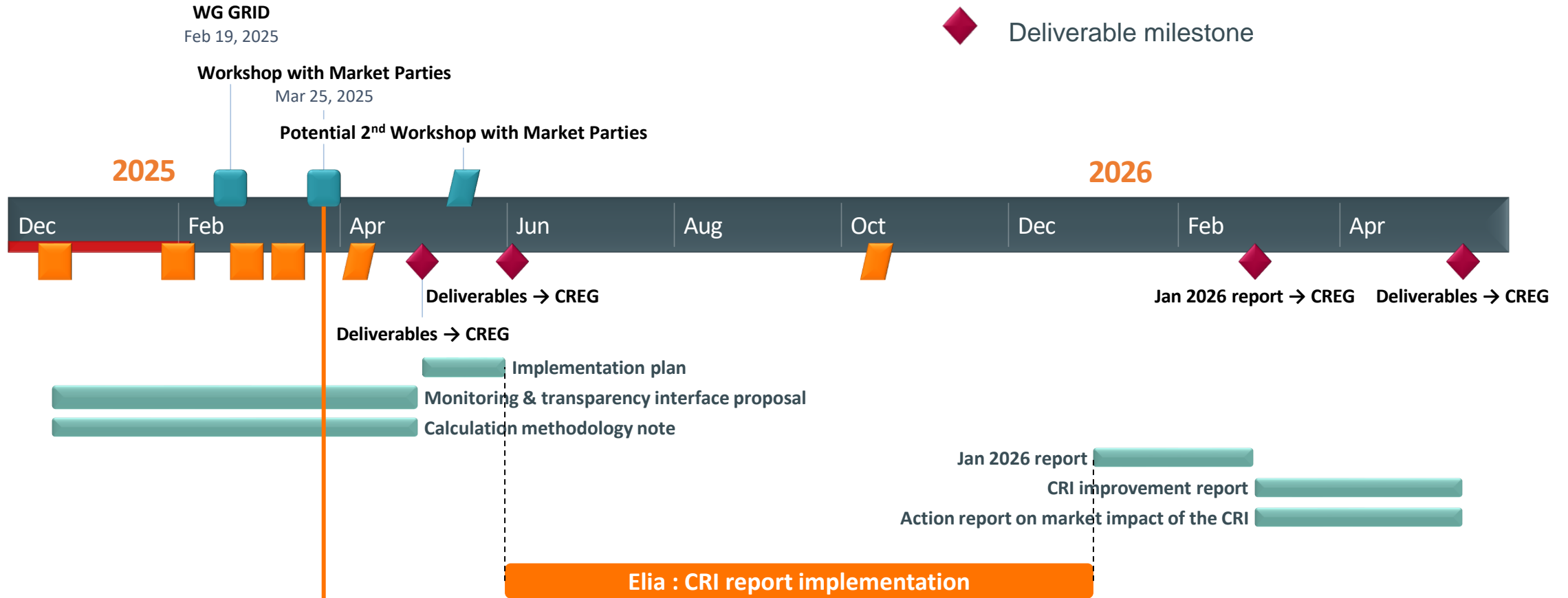
iCAROS: feedback on the informal consultation T&C SA - REX iCAROS phase 1 & release 1 iCAROS phase 2 + Design clarification: simultaneous signal of Return to Schedule (RTS and FCR in opposite direction)

System Services Design

Viviane Illegems, Raphaël Dufour

Informal consultation – T&C SA

iCAROS phase 1
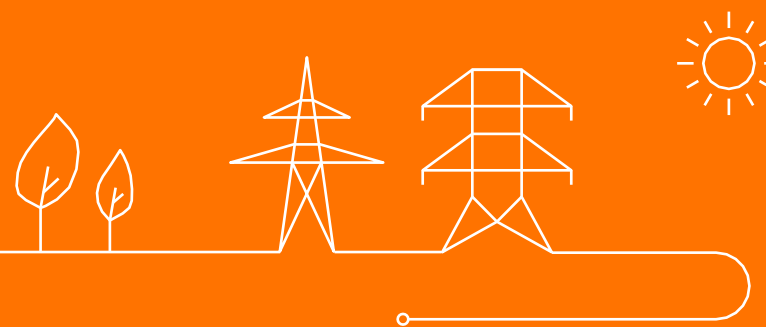
Informal consultation : T&C SA following the REX iCAROS phase 1

- Consultation period (3 weeks) : 23rd of January, 2025 to 12th February, 2025.

- scope : Limited number of implementation modifications & design clarifications following the REX of iCAROS phase 1 limited to impacts on the Scheduling Agent

Not in the scope :

- Changes regarding the Outage Planning Agent → part of the formal public consultation dedicated to the Outage Planning Agent

- Modification of the body of the Scheduling Agent (SA) contract

Requested Feedback

Through this informal consultation Elia requested feedback whether :

1. **The proposed ways forward to tackle these issues are acceptable for all market parties. These ways forward could be:**

   - A solution proposed by Elia

   - A process to come to a solution

   - A temporary workaround as long as no solution is found

2. **In case of implementation changes, the proposed timing for implementing the modifications is acceptable for all market parties**

3. **In case of limited contractual modifications, market parties agree with the proposal of Elia to only modify the T&C SA annexes for these specific changes**

Overview of design clarifications & implementation changes

- Issue 1 : Design clarification → Integration of a Pmin for wind parks

- Issue 2 : Design clarification → How to react on a simultaneous signal of Return to Schedule (RTS) and FCR in opposite direction

- Issue 3 : Implementation change* → RD bidding properties – Minimum Activation Time

- Issue 4 : Implementation change → RD bidding properties – Full Activation Time

- Issue 5 : Implementation change → RD bidding properties - conditional links specific for start-ups/shut-downs

- Issue 6 : Implementation change → RD bid validation rules - Minimum Activation Time

- Issue 7 : Open implementation issue → conditional bid link across multiple days

- Issue 8 : Open implementation issue → Cancellation of bid time series

*The terminology used for the implementation changes are those that can be found in the technical guide

Received Feedback

Feedback received from 4 market parties – 3 non-confidential (Febeliec, BOP & FEBEG)

Febeliec

1. **Formal consultation is needed for any modifications to regulatory documents but in support not to reopen the entire Terms and Conditions and design discussions.**

2. **not in favor of the integration of a Pmin for wind parks as long as no quantified arguments have been presented which would justify the introduction of a Pmin for wind parks.**

3. **Regarding the return to schedule, doubts about the inclusion Pmin BUT especially opposition concerning any financial (or other) compensation for return to schedule signals**

4. **Request to follow-up the obligation for the concerned assets to provide bids**

Received Feedback

BOP

1. Avoiding curtailments of wind parks is not a matter of missing market opportunities, it has a technical impact on the lifetime of the turbines and financial implications for buying energy. This justifies a specific bid below the Pmin at a higher bid price.

2. BOP proposes to limit the frequency of curtailments below Pmin to one curtailment per day where the bid price is set in accordance with the duration of the curtailment and/or other impacting parameters.

3. BOP agrees with the proposed modification of the RTS but indicates that this should not be viewed as agreeing with the general concept of return to schedule. BOP expects in the framework of iCAROS phase 2 a more elaborated justification of the need for RTS and demands it use to be of last resort only and with full remuneration for renewable (or weather dependent) energy producers in accordance with the EU Electricity Regulation.

Received Feedback

FEBEG

1. **Appreciates REX and indicates that it should be a common practice for important implementation projects.**

2. **Agrees that a REX should focus on implementation, operational and IT issues, and not on market design issues. Market design should be a separate track.**

3. **Feedback regarding 8 issues :**

- Issue 1 : Design clarification ⬛ Integration of a Pmin for wind parks : support

- Issue 2 : Design clarification ⬛ How to react on a simultaneous signal of Return to Schedule (RTS) and FCR in opposite direction : support

- Issue 3 : Implementation change* ⬛ RD bidding properties – Minimum Activation Time : No support

- Issue 4 : Implementation change ⬛ RD bidding properties – Full Activation Time : No support

- Issue 5 : Implementation change ⬛ RD bidding properties - conditional links specific for start-ups/shut-downs : support

- Issue 6 : Implementation change ⬛ RD bid validation rules - Minimum Activation Time : support

- Issue 7 : Open implementation issue ⬛ conditional bid link across multiple days : support

- Issue 8 : Open implementation issue ⬛ Cancellation of bid time series : request to assess whether a workaround can be found with limited implementation efforts for SA

Timeline : REX phase 1 – T&C SA – subject to Feedback received during informal consultation

Go-live of the implementation related to T&C SA REX phase 1
Sep 30

Submission of consultation report to NRAs (CREG, VNR & Brugel)
Apr 16

Regulatory approval of T&C SA
Jun 30

| 2025 | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | 2025 |

Today

Feb 28 - Mar 31 **Public consultation - 3 changes annex T&C SA**
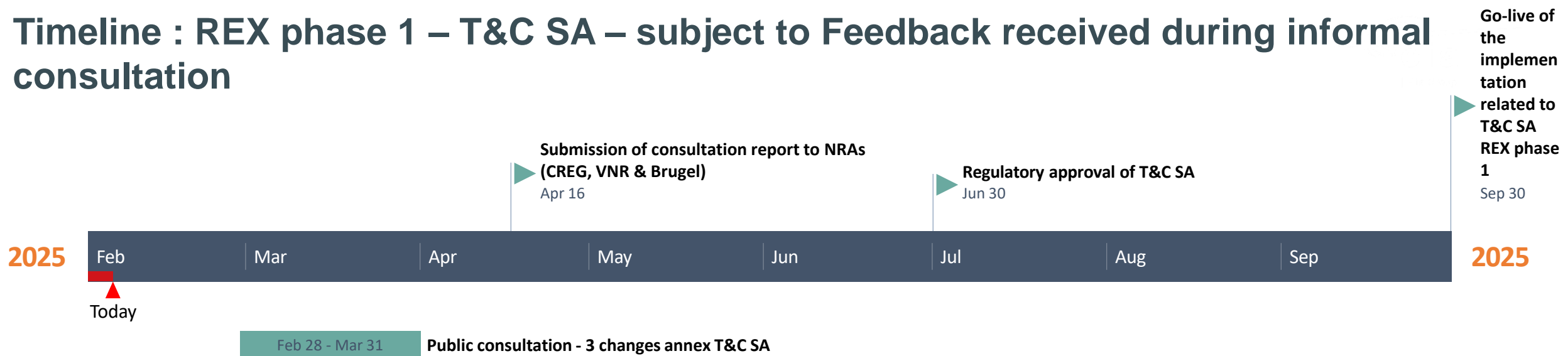
- Formal consultation for 2 of the 3 modifications of annexes of T&C SA : end February – end March 2025

- Subject to acceptance of CREG of additional justification provided by wind parks the 3th modification will also be added to the formal consultation.

- Regulatory approvals (CREG, VNR & Brugel) before end June 2025

- Given the implementation of Issue3 & issue4 is viewed - by the SA - as costly and with limited value added, Elia will only implement these IT implementations if an SA indicates it is needed to offer its full flexibility. Elia requests therefore SAs to recontact Elia to discuss a way forward, given that Elia notes that not all flexibility is offered today by all SAs.

- Issue 8 : Elia is willing to reassess together with SAs if other workarounds or an enduring solution is possible

- Go-Live from the moment of regulatory approval (assuming end June 2025) till end September 2025 – SA will be informed when a feature will go live

Design clarification : simultaneous signal of Return to Schedule (RTS) and FCR in opposite direction
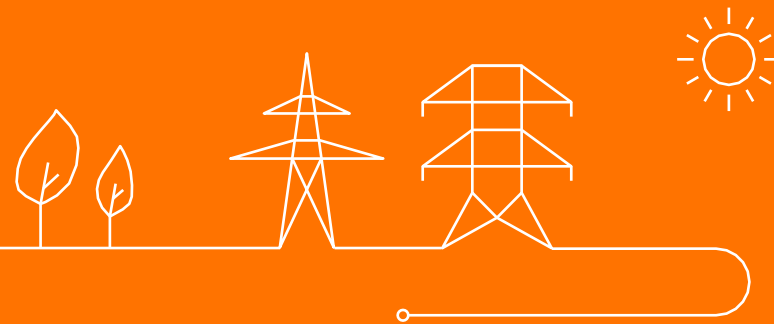
Description of the issue

- Technical facilities with a power above or equal to 25 MW with one or multiple delivery points:

  o Providing FCR service; and

  o located in an electrical zone for which a high or medium CRI is defined

- In case of medium/high CRI in the electrical zone, a combination of a Return to Schedule (RTS) request and a FCR activation in opposite direction is possible

High or Medium CRI

Return to schedule request (up/down direction) to SA

Frequency deviation

Automatic FCR reaction (down/up direction)

Schedule

Real-time measurement

?
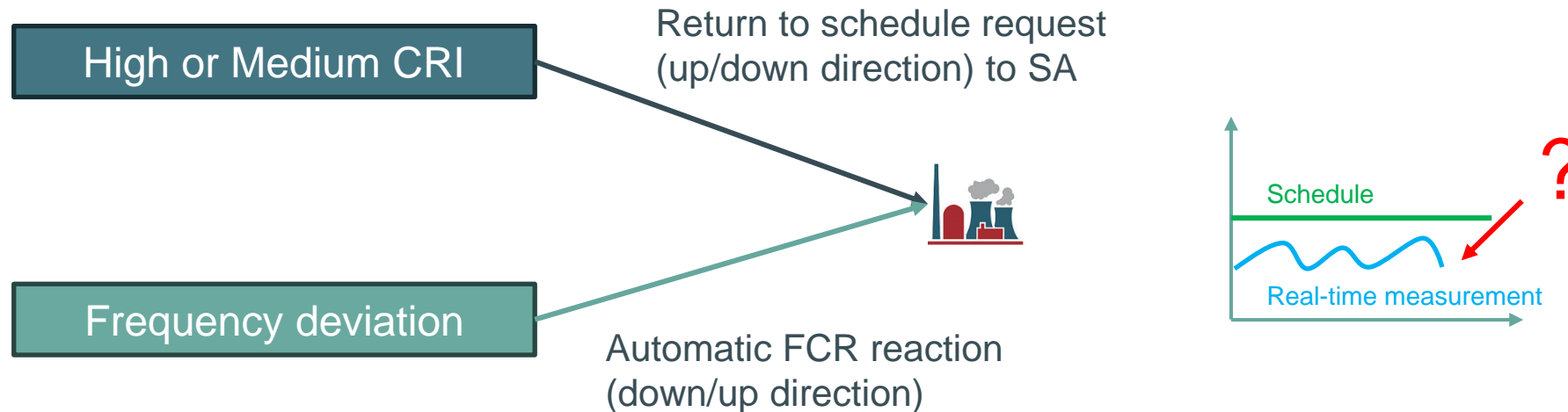
- Clarification of the design is necessary

  o What is the expected reaction from the delivery point facing both signals?

  o How are FCR and RTS controls performed in this case?

Proposed approach for FCR activation in case of RTS in opposite direction (1/2)

- Filtering of energy bids do not apply for FCR (capacity product)

- Elia proposes to implement a similar solution to the one implemented for aFRR i.e.

  - The FCR reactions have still to be provided if a RTS is requested in the opposite direction (usual FCR activation process)

  - The RTS has to be performed considering the FCR activation i.e. the expected setpoint to reach corresponds to

    o In case of upward RTS: Schedule + downward FCR requested volume

    o In case of downward RTS: Schedule + upward FCR requested volume
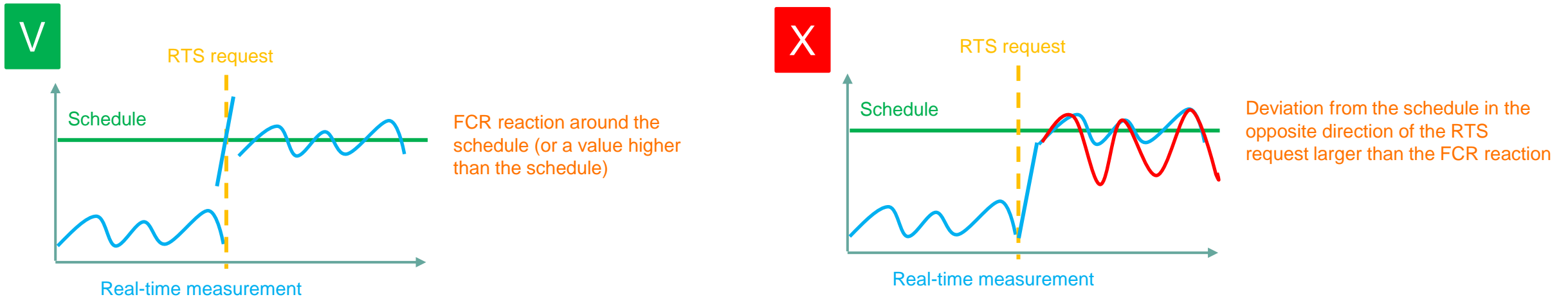
Important note: Energy Management Strategy for LER assets cannot be a reason to not respect the RTS request

Proposed approach for FCR activation in case of RTS in opposite direction (2/2)

- **From a settlement point of view:**

  - The RTS control (applied at delivery point level) will take into account the FCR requested volume according to the "setpoint to reach" defined in the previous slide

    - The FCR requested volume is computed based on the FCR contracted volume at providing group level (that includes the concerned delivery point) and the frequency measurement

  - There is no impact on the FCR control process

Implementation impact of the proposed approach

- **Correction of FCR component in the RTS control formula**

    - Modification of Annex 9 A of T&C SA related to RTS control

    - Implementation in settlement tool – Possible as from Q3 2025

    - As a temporary solution before implementation of the target solution, a manual correction of the RTS control will be performed to avoid penalties in case of FCR activation in opposite direction beyond the tolerance

Formal consultation – T&C OPA

iCAROS phase 2 – Release 1
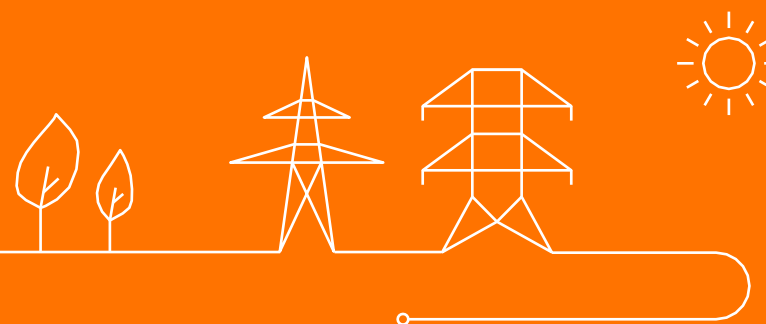
iCAROS phased implementation

Availability planning process – iCAROS phase 2
Target design for production and storage facilities

Target design

- **Simplified and uniform process** to provide availability plans to Elia

  - Removing several "gates" to provide information and introducing **continuous updates of data***

  - Full alignment with SOGL statuses for all timeframes

- Introduction of **Y-3 process** in accordance with article 93 of the SOGL

- Alignment of provision of data with **requirements related to transparency**

AS IS

	Y-1	Y	D-7	QH	RT

Current processes with **updated** files sent to Topaz | Process in Optiflex

OPA: Listed → Revision → Stand by → Ready-to-run → Availability plan (qh)

Status:
- Listed L / Non Listed NL
- Non Revision NRV / Revision RV
- Stand-by S / Non Stand-by NS
- Ready-to-Run RR / Non Ready-to-Run NRR
- Available A / Unavailable U / Testing T / Forced Outage FO

TO BE

	Y-3	Y	D-7	QH	RT

Full process in Optiflex

OPA: Availability plan

Availability Status:
- Available A
- Unavailable U
- Testing T
- Forced Outage FO

* Allowing for an event-based process supported by modern B2B and B2C exchange (removal of current excel templates and mail exchanges)

Timeline : Release 1 – Full design OPA for big units - Updated T&C OPA

Information session regarding common testing
Feb 25

Submission to regulators
Apr 1

Deadline for all NRA decision to ensure go live 17 June 2025
Jun 3

Demo environment available for testing by OPA
Apr 3

Go live Release 1 - phase 2
Jun 17

| 2025 | Jan | Feb | Mar | Apr | May | Jun | 2025 |

Today

Public consultation T&C OPA — Jan 31 - Mar 3

Consultation report — Mar 4 - Mar 31

Individual testing of OPAs — Apr 3 - May 29

Common testing - focus on specific unavailability events — Apr 25 - May 2

Common testing - focus on production data — May 15 - May 29

- Public consultation release 1 takes place from 31th of January to 3rd of March 2025

- Information session regarding common testing will be organized 25 February 2025 from 2 till 4 pm

- Regulatory approvals (CREG, VNR & Brugel) need to take place before 3rd of June to ensure timely go-live

Stakeholder interactions
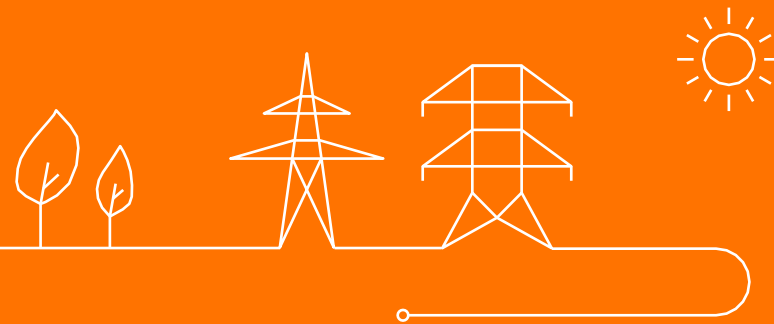
Upcoming stakeholder management interactions in the framework of iCAROS

- Past interactions
  - **Informal consultation** impact Rex phase 1 on T&C SA : 23rd January, 2025 to 12th February, 2025.
- Ongoing interactions
  - **Public consultation** regarding T&C OPA for Availability Planning extension for large units [release 1] : 31th of January to 3rd of March 2025
- Next interactions
  - **25 February 2025 from 2 till 4 pm : Information session regarding common testing** for Availability Planning extension for large units [release 1]
  - **End February 2025 Launch public consultation** impact Rex phase 1 on T&C SA
  - **End April 2025 – Target date for common TSO/DSO Launch of informal consultation** design for small units /Demand facilities [release 3]
  - **Q2 2025: taskforce iCAROS** – presentation design extension of CRI to local (< 150 kV up to 36/30 kV) - no development needed from market parties [release 2]

Organizational Changes
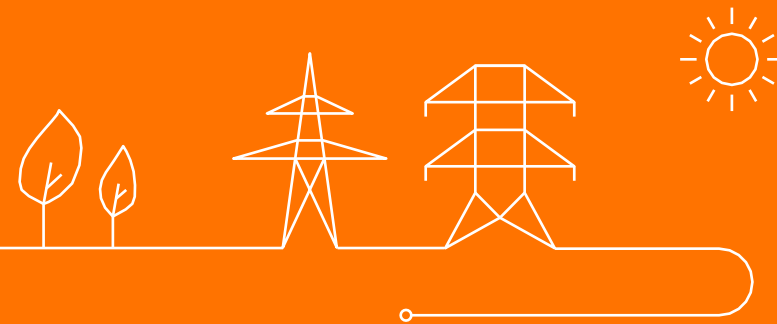
Organizational changes

Raphaël Dufour will take a new role in Elia as of March 2025

He will be gradually replaced by **Alberto Bonelli** who started in February 2025

Alberto will be accompanied by **Glenn Plancke** for topics relative to regional and distribution grids
(ex. Design note OPA for < 25MW, demand, and DSO grid)

WG Grid

GUFlex: status project and way forward

System Services Design

Antoine Weynants

GUFlex

1. Organizational changes

2. Status – way forward

3. Placeholder for workshops
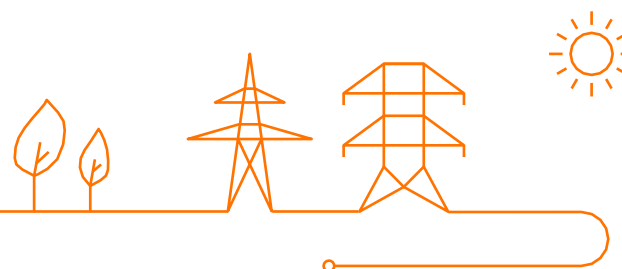
1. Organizational changes
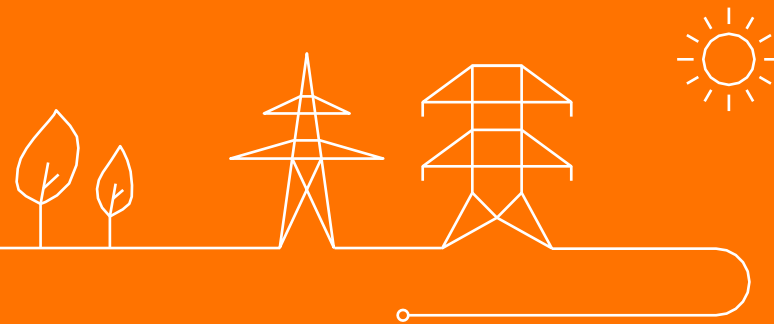
Organizational changes

Antoine Weynants will take a new role in Elia as of April 2024

Cécile Pellegrin will take the role of GUFlex PM

2. Status – way forward

Delivrables in 2024 and look forward
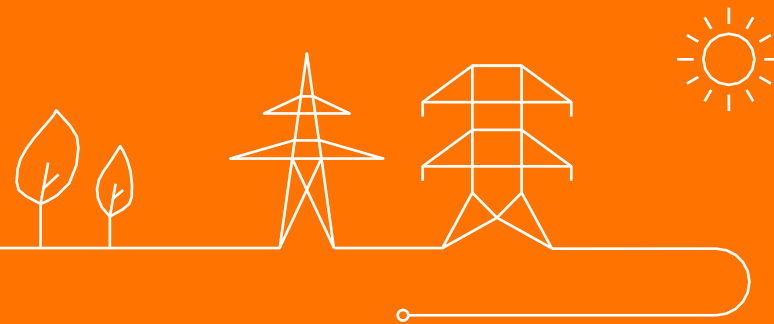
What we have done in 2024

We proposed a design for the **flexible connection product** (Gflex) fit for

production, **storage** and for **demand facilities** capable to **react in real-time**

- Purpose to provide clear **guarantees** so that GU **can assess the impact on their business case**
- Focus on federal grid with idea to expand nationally
- Focus on transparency (studies, operational process)

Proposal of Code of Conduct
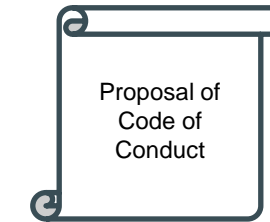
Was just consulted by the CREG

Next: 2 main packages of evolution

Continue evolution of the ST target
Industrialized connection with flexible access for customers awaiting grid reinforcement

- Continue to work on open **design elements** and finetune the design based on CREG's final decision on the Code of Conduct
- **Implementation** : regulatory, processes and tools

- **Expand** to all regions (framework, design proposal)

- **Offer PoC & Fast** track solutions for 'slow assets' in order to develop products

Focus of 2025 and beyond

LT Target: *optimal use of flexibility from Grid Users*
- ✓ *from grid planning (TOTEX: trade off between flexibility & infrastructure) …*
- ✓ *to operations (optimal merit order) …*
- ✓ *with a consistent set of products*

- Allows to avoid over-building the grid and to cope with the increasing connection request, cutting the tail of the grid-investment needs (and their uncertainties) thanks to flexibility
- Societal optimum in operations by using the cheapest flexibility
- ⚠: Requires an important paradigm shift that will deeply impact many processes
- ⚠: implies to merge some iCAROS products and GUFlex in the future and to reorganize the programs
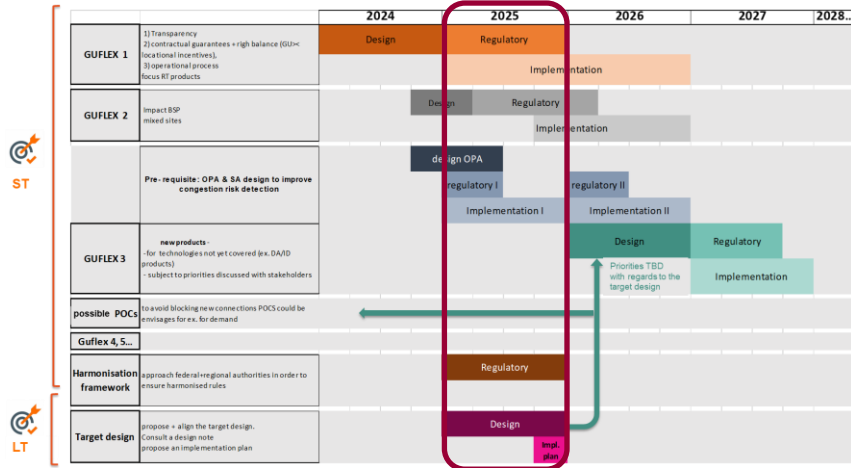
GUFlex 1

- Impact analysis CoC & design adaptations

- Design fine-tunings & Public documents
  - Bank Deposit (in WG Belgian grid)
  - Revision process related to grid study methodology

- **3 to 6 Regulated documents**
  - Connection Contract
  - Coordination Rules
  - T&C BRP
  - Other (e.g. T&C BSP)

GUFlex 2

- Design for mixed sites
- Mitigation principles BSP
- Mitigation principles CRM

GUFlex 3

- Possible POCs (exact number of cases and complexity can vary)

Harmonization

- Transposition of EMDR in regional legislation
- Collaboration with DSOs and regional regulators
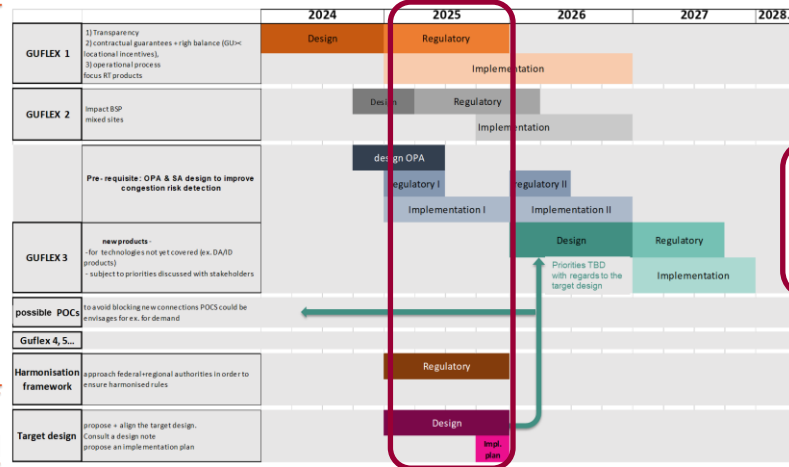
Optimal usage of flex in Grid planning

Optimal usage of flex in operations

LT Target

Consistent set of products able to use all existing flexibility

☐ Methodology flex vs grid reinforcements
    ☐ Boundaries
    ☐ Definition future scenarios

Market Design considerations:

☐ Reconsider remuneration modalities for a future where there is "INC-DEC gaming" paradox

☐ Costs reallocation methodology

Operational prerequisites

☐ RAO & operational processes

☐ OPA SA data improvement (iCAROS)

Product design

☐ Separate financial & technical modalities of flex. access

☐ Define new congestion products (link with iCAROS)
    ☐ all timeframes
    ☐ all technologies

Indicative Planning 2025

WS

WG Grid/BG/Bal

ST

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |

CoC art. 61

Impact analysis CoC

•Impact BSP/CRM
•Mixed site

Design Guflex 2

Design finetuning Guflex 1

•Connection contract
•Coordination rules

drafting — 1 M PC — rework before submission

drafting — 1 M PC — rework before submission

•T&C's BSP

PC can start only once:
- Previous amendments approved
- Design finalized

The planning of the public consultations was established by finding the synergies and trying to group the consultation as much as possible while taking into account the timing and constraints of the already planned and coming amendments

drafting — 1 M PC — rework before submission

•T&C BRP

POCs , Regional Legislation, DSO alignment

3. Placeholder for workshops

Placeholder for two coming workshops

❑ **31/03/2025 AM (9:00-13:00)** in Empereur office

❑ **19/05/2025 AM (9:00-12:30)** in Empereur office

→ These are **placeholders**

Some design elements and the next steps to be undertaken are still uncertain without CREG's final decision on the Code of Conduct. These workshop may therefore be canceled depending on the timing of CREG decision and on the further analysis to be done.

MVAr: status project and way forward

System Services Design

Carsten Bakker, Alexandre-Amaury Nève

MVAr

1. Organizational changes

2. Status – way forward

3. Upcoming workshops
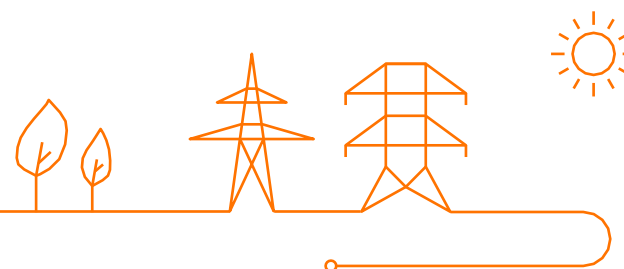
1. Organizational changes
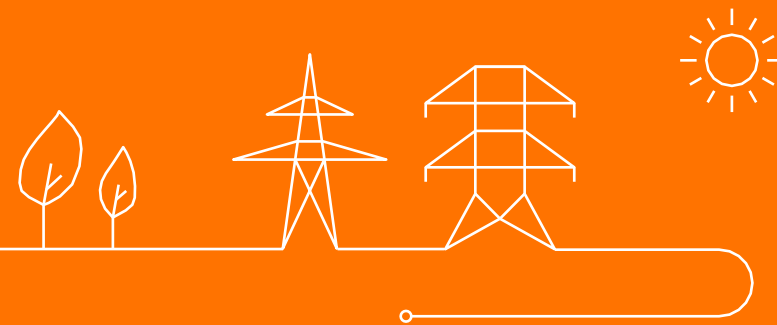
Organizational changes

Carsten Bakker is transitioning out of the MVAr Service Architect position until 31st of March 2025

Alexandre Nève is transitioning in the MVAR Service Architect position – Full transfer by April 1st 2025

2. Status – way forward

Timeline for next years

2025

| Q1 | Q2 | Q3 | Q4 |

2026

| Q1 | Q2 | Q3 | Q4 |

2027

| Q1 |

Now
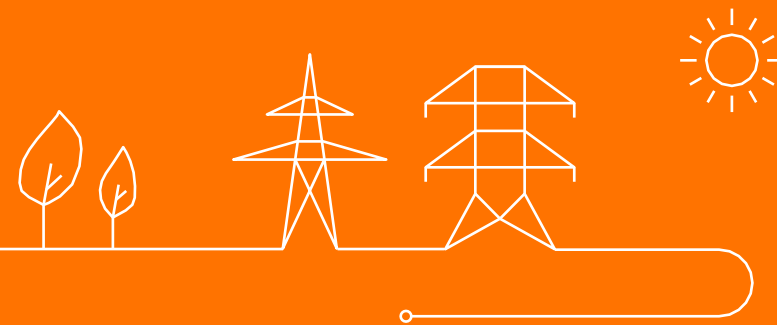
- Publication of VSP Technical Guide
- Submission of Availability Analysis to CREG

New tender to be launched for 2027-2028

Go-Live new VSP T&C and new communication protocol

Modifications of T&C | PC

Modifications of Tender Procedures | PC

Support for implementation | Demo env ready

End-to-End integration by VSP and testing

From Mid-March 2025 until mid-April 2025: Public Consultation on updated VSP T&C

This planning may be subject to revisions.

Modifications to the T&C (Market design)

In the incentive last year, general improvements to the market design were identified to improve the functioning of the market design.

1. Continuous activation control for manual and automatic activation

2. Remuneration reduction in line with the continuous activation control.

3. Communication with Elia: IT change & availability messages

4. Price setting during the tendering process (already implemented)

5. Update the VSP T&C to be more technology-neutral

6. Simplification of the participation for non-mandatory units

7. Start-up of assets not available for the service (in stand-by)

8. Maximum reactive power ramp rate

Discussed in the incentive

Additional topic

3. Upcoming workshop
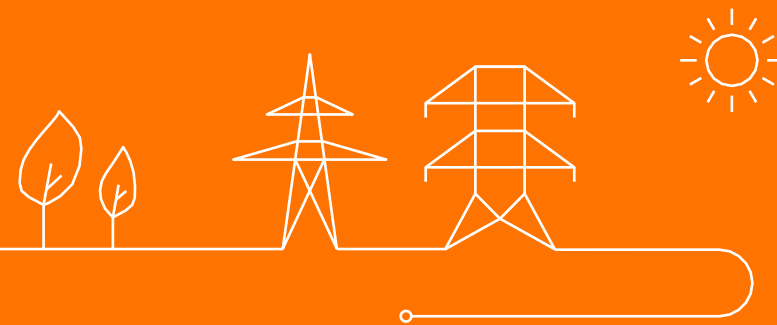
Upcoming workshop on the VSP T&C update

❑ **11/03/2025 PM (15:00-17:00) - Digital Information Session**

As part of the update process of the Terms & Conditions for Voltage Service Providers (VSP), this Digital Information Session will provide Market Parties with an overview of the updates brought to the new version of the Terms & Conditions for VSP.

Operations
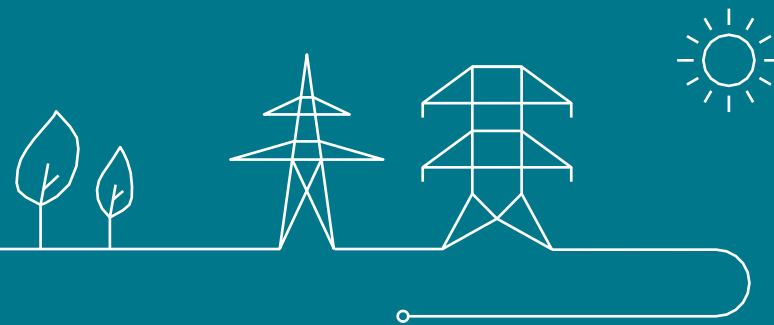
NCC Annual Report 2024

Operations

Tom Vandenbroucke

Nemo & Alegro flows
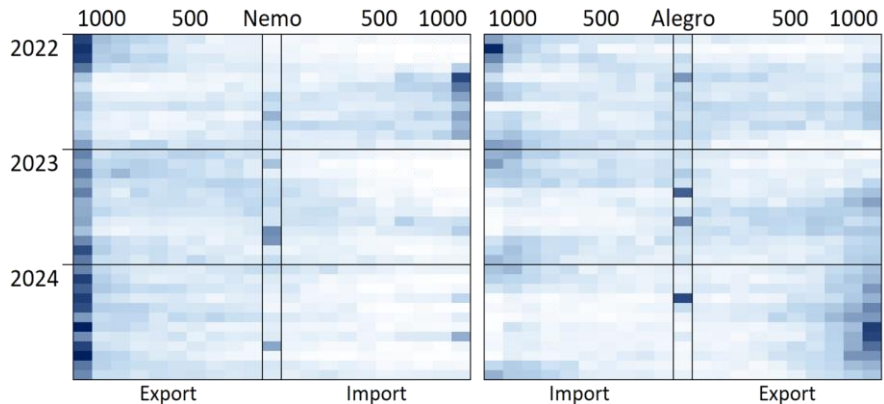
Special events

EAS/Elia Emergency	EAS Alert
0	**7**

09/02: Loss of MOG Cable 220.4 because of work incident. GFLEX activated
14/02: Tihange 3 into island mode, causing 60mHz frequency drop
22/02: Trip 150.25 and 150.26 after crane on boat hit the power lines
20/03: Incompressibility: resulting from unforeseen solar production
31/03: Loss of tools: Probid unable to send mFRR bids to BRPs
07/04: Incompressibility: Due to solar overproduction, ACE>1GW (1QH)
30/04: Incident in Coo turbine tunnel. Coo 1,2, 3 stopped in following weeks
09/07: Heavy thunderstorms caused multiple pylons to fall (lines 150.65, 66)
12/08: N-1 violation due to high summer conditions for a couple of days
21/08: Wrong Belgian Net Position used in ID calculations and no SA avail.
24/08: High system imbalance and ACE due unpredictable sun and wind
06/09: Grid congestion and unsolvable N-1 violation due to forecast deviation
08/09: High imbalance during program change of 6PM, ACE up to 1000MW
29/09: Incompressibility due to inaccurate DA solar forecast

PSTs tap usage
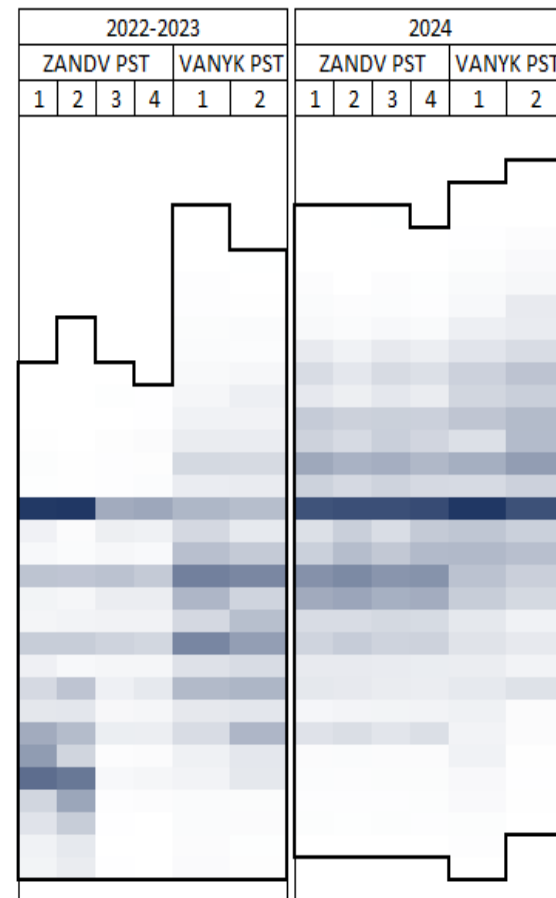

Congestion management: 4.33 M€ (2024)

High N-S flows & outage 380.79.

May not run Plate taille

Project Avelgem + outage 380.74

Legend: ≥DA | ID | XB

Flux (2024)

Percent of time flux is higher than 70% of dynamic limit
- 0%
- 0 - 0.5%
- 0.5 - 2%
- 2+ %
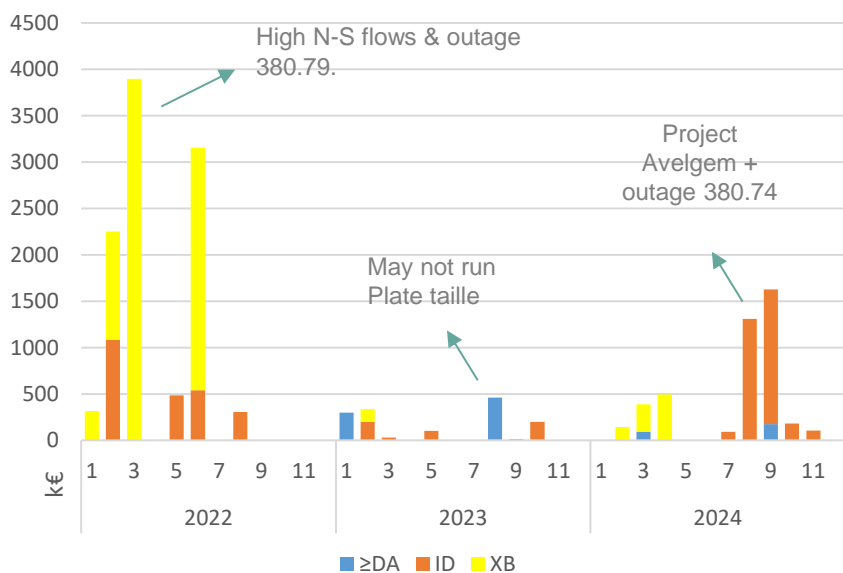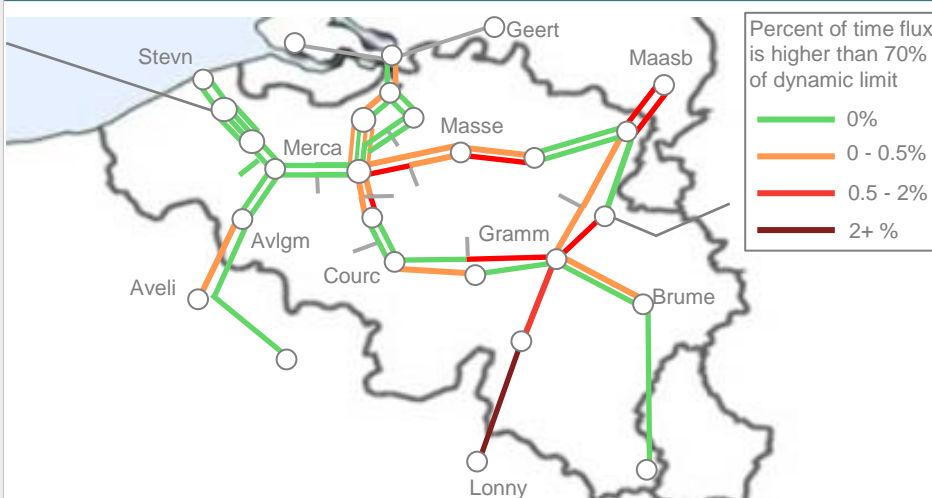
Maximal (relative) hourly loading:
12/05 01h: 380.61 Merca-Masse @ 1330 MW / 89% $Lim_{seasonal}$

Max range used
Frequency of occurrence
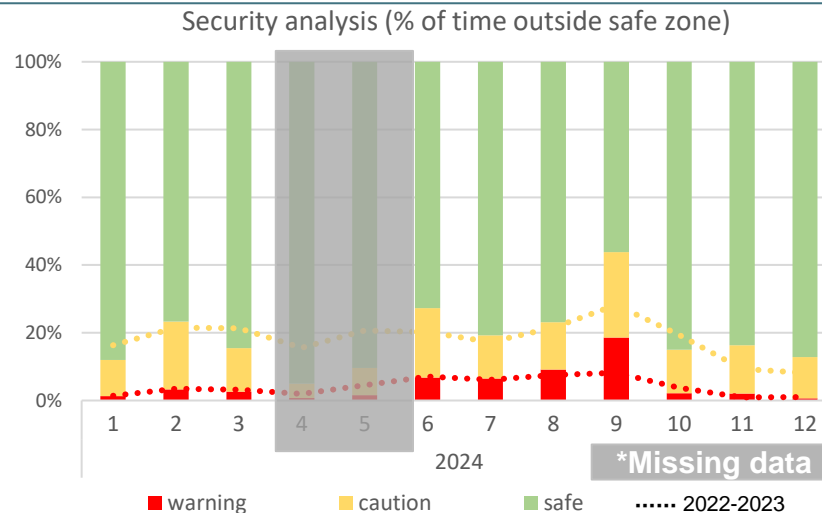
Frequency

Daily min/max (10s resolution)
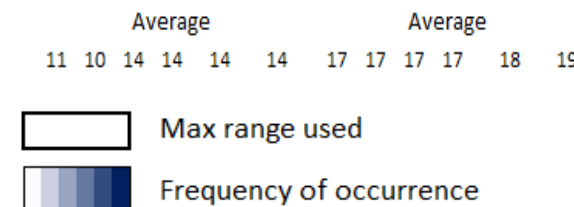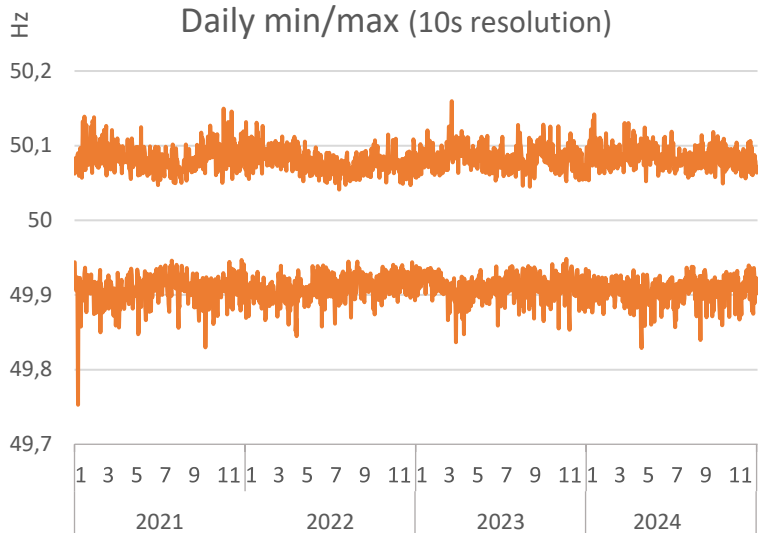
8 Jan 2021: A grid split Balkan & Romania caused the frequency in our part of Europe to drop to 49.75 Hz

17 May 2021: Frequency dropped to 49.85 Hz due to a trip of 3300 MW generation in Poland

24 July 2021: Iberian grid split. no significant impact on frequency since the flow over that border was not huge

Oct-Dec 2021: Kosovo TSO being structurally short (accumulated time deviation of -87s where normal values are +- 20s)

28 Mar 2023: Program change in France and Italy with high renewable impact led to a frequency drop to 49.84Hz

28 Apr 2024: Program change leading to a frequency drop to 49.828Hz

21 Jun 2024 : Blackout in the Balkans. Small impact on continental Europe frequency.

Security analysis

Security analysis (% of time outside safe zone)

*Missing data

warning — caution — safe — 2022-2023

Yearly average comparison

	2022-2023	2024
Caution	14,2%	14,0%*
warning	4,1%	4,6%*

Most frequent Critical Branches

(as % of time CB's appear in caution or warning zones in 2024)

1. DI   150 103 RODENSIDM — 1,56%
2. MEERH380 T 1 380/150/3 — 1,06%
3. DI   150 78 MONTIPONT — 0,98%
4. STEVN380 T 3 380/220/3 — 0,91%
5. DI   220 11 OS1STSTEV — 0,87%

Voltages (MVar)

MVAr activation volume (GVArh)

Production   Absorption
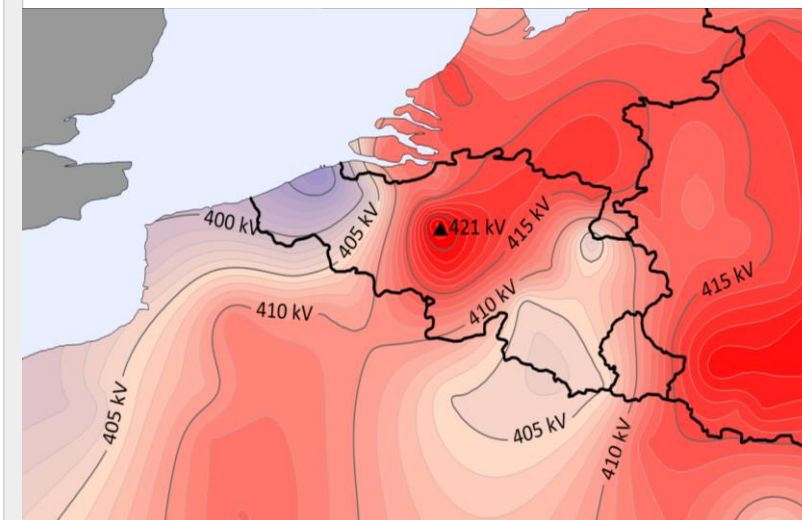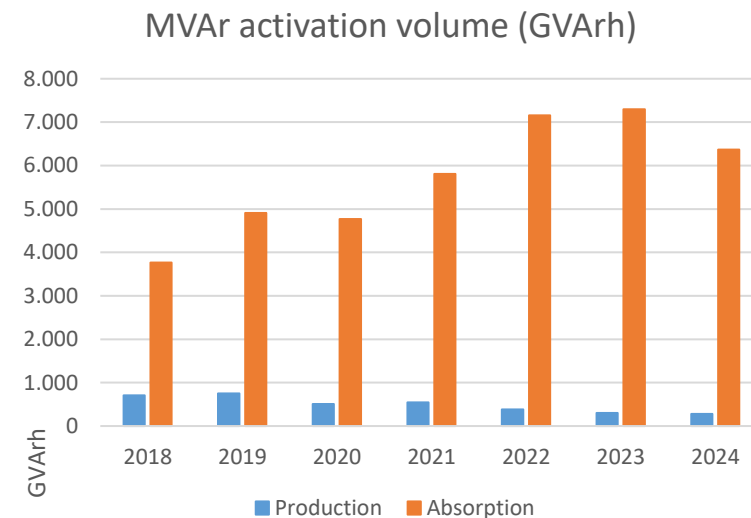
Highest voltages reached 08/09/2024 (Sun) 09:00
→ Double outage 380.35/36

ACE

Max qh deviation

983 MW

@ Sun 07/04/2024 12:00

System Imbalance

Max qh deviation

+ 2412 MW

@ Sun 07/04/2024 12:45

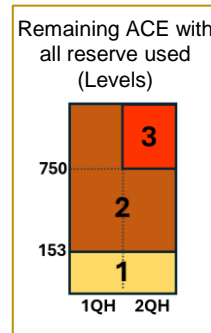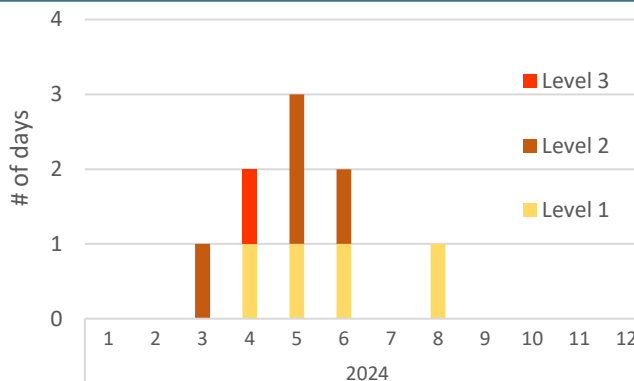## Automatic Balancing

aFRR + iGCC

896 GWh/year

-10% (vs. 2023)

Manual Balancing

mFRR + inter-TSO

337 GWh/year

-13% (vs. 2023)

Incompressibility

Remaining ACE with all reserve used (Levels)

Imbalance Prices

Average Belgian Imbalance price:

70 €/MWh

Imbalance price spike:

- 4575 €/MWh

@ Sun 07/04/2024 14:15

St.dev of ACE and SI
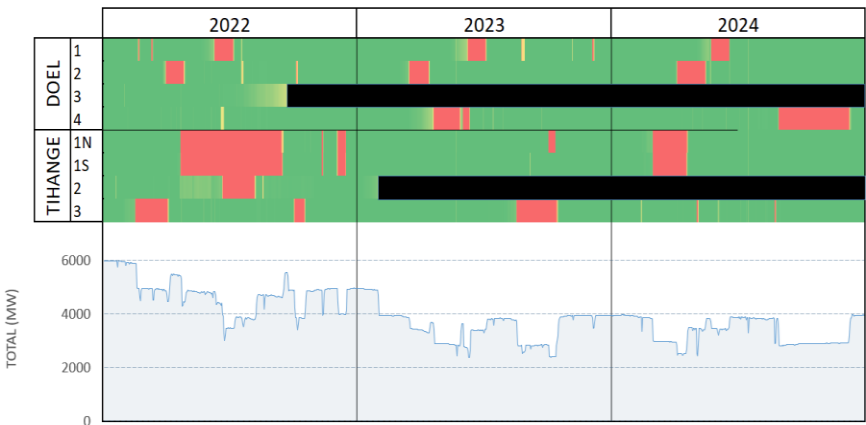### (monthly values & 12m-rolling averages)

Balancing Activations

	2024 GWh/month	vs. 2022-2023 average in %
aFRR + iGCC	74,7	-9%
mFRR Up	21,3	-8%
mFRR Down	6,2	-37%
Inter-TSO	0,6	558%
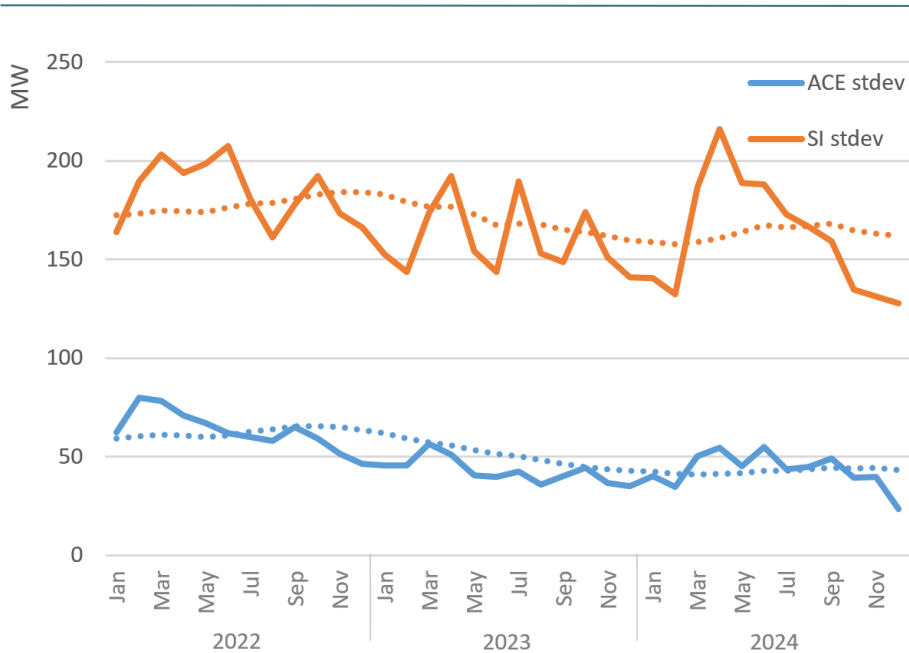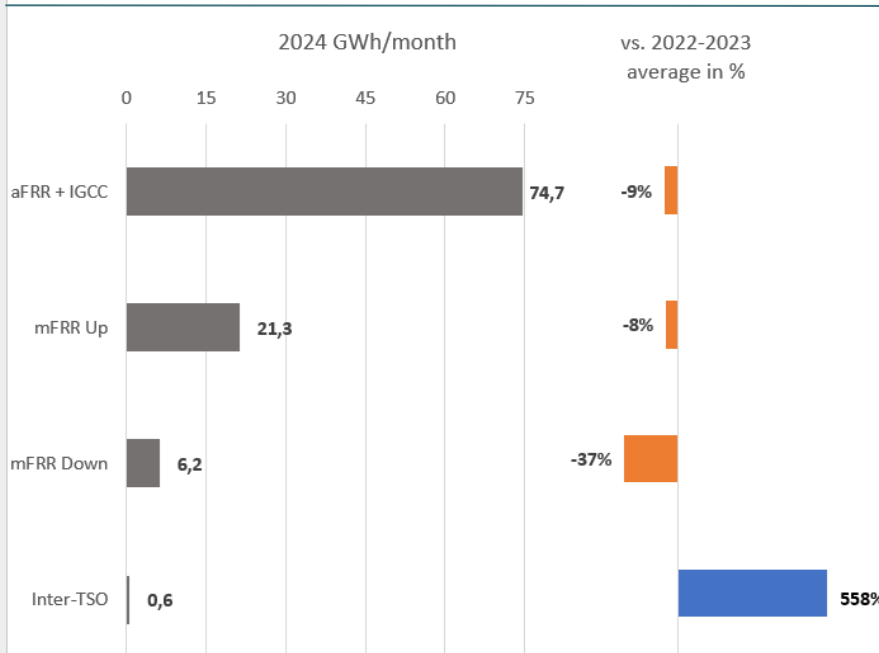
Belgian Day-Ahead price (€/MWh)

	2022-2023	2024
Max (h)	871	565
Average	170	70
Min (h)	-120	-140

Imbalance (€/MWh)

	2022-2023	2024
Max (qh)	3 456	2000
Average	165	70
Min (qh)	-692	-4575

Nuclear availability & total production

Total load

Average Total load (2024):

9220 MW

-1.6% (vs 2019-2023)

	2023	2024	% change
Max:	12680 MW	13282 MW	(+4.7%)
Avg:	9012 MW	9220 MW	(+2.3%)
Min:	5779 MW	6158 MW	(+6.5%)

Generation Mix

As % of total load

Thermal

Nuclear   Gas   Others

Renewables

Off-Shore   On-Shore   Solar

Import (positive = import)

NWE Prices (baseload)

France   Germany   Great Britain   Netherlands   Belgium

Total load

Min/Max 2019-2023   2024   Average 2019-2023
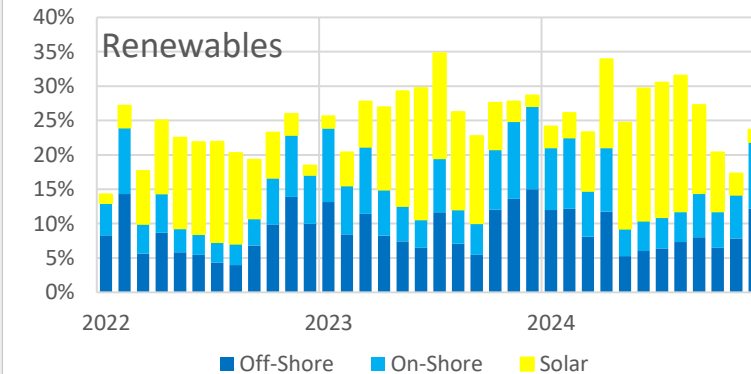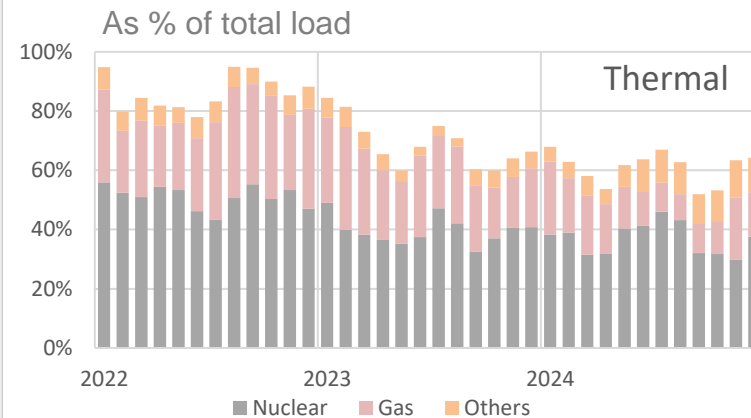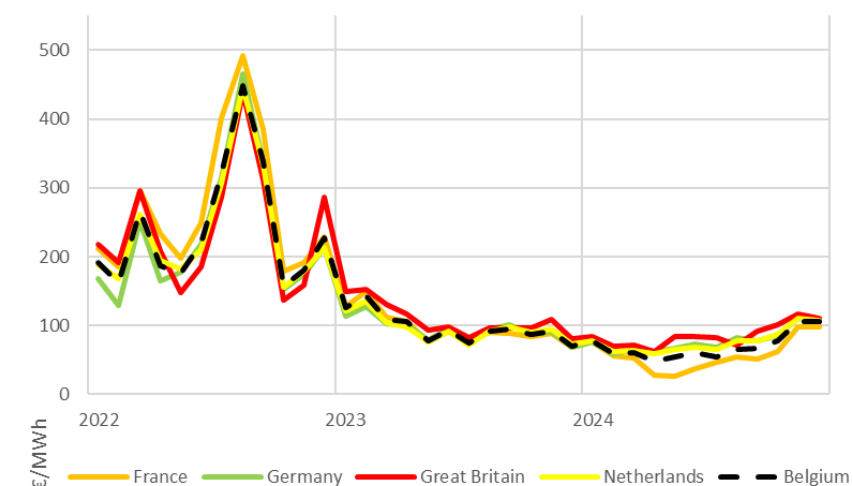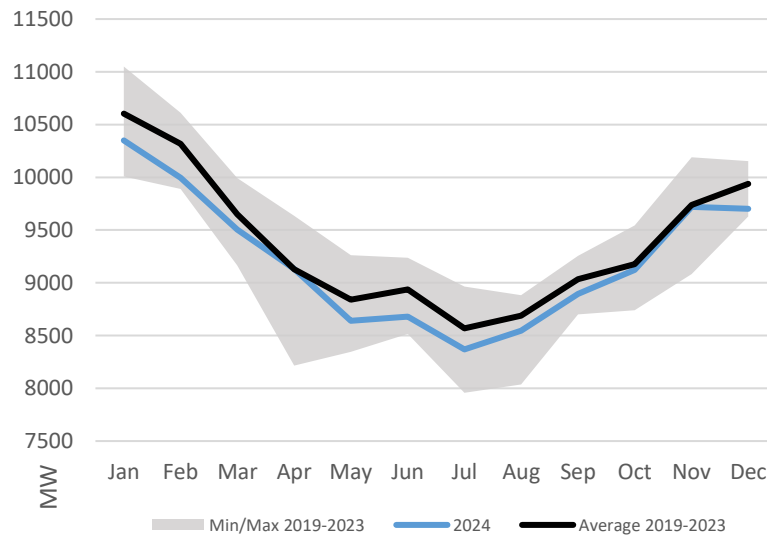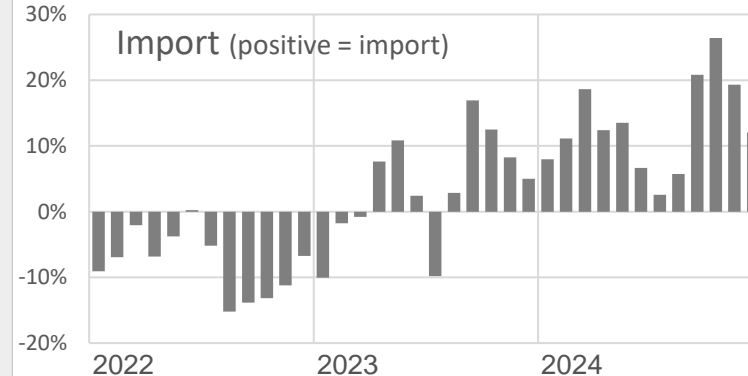
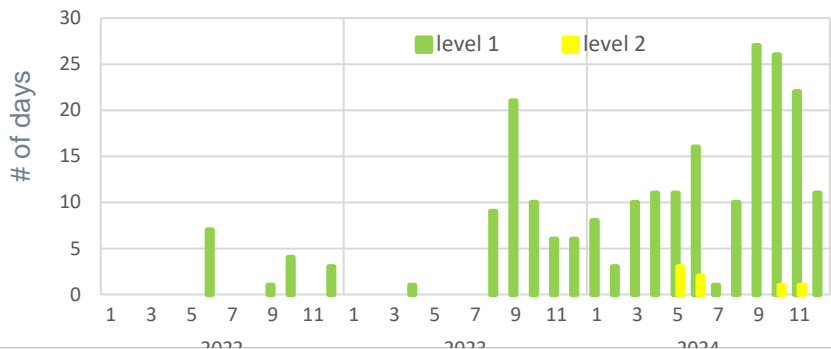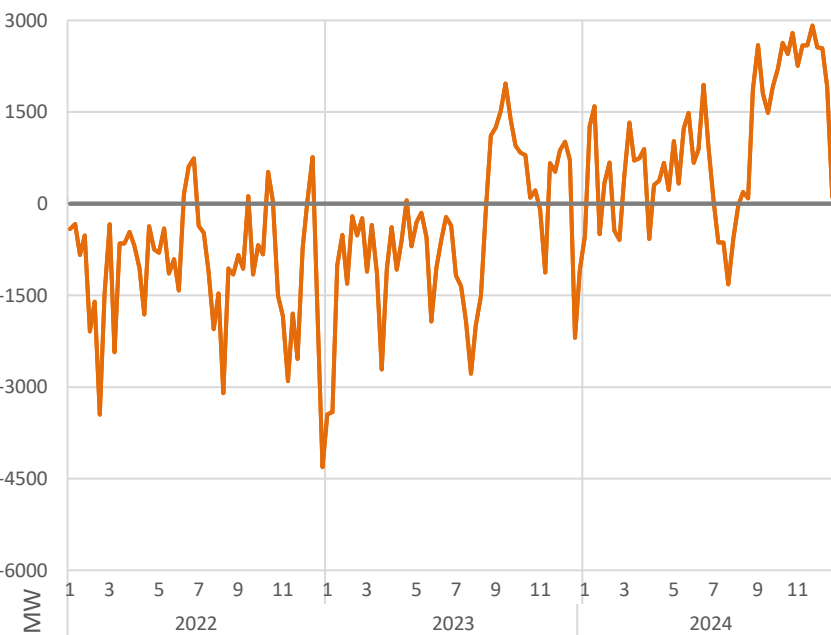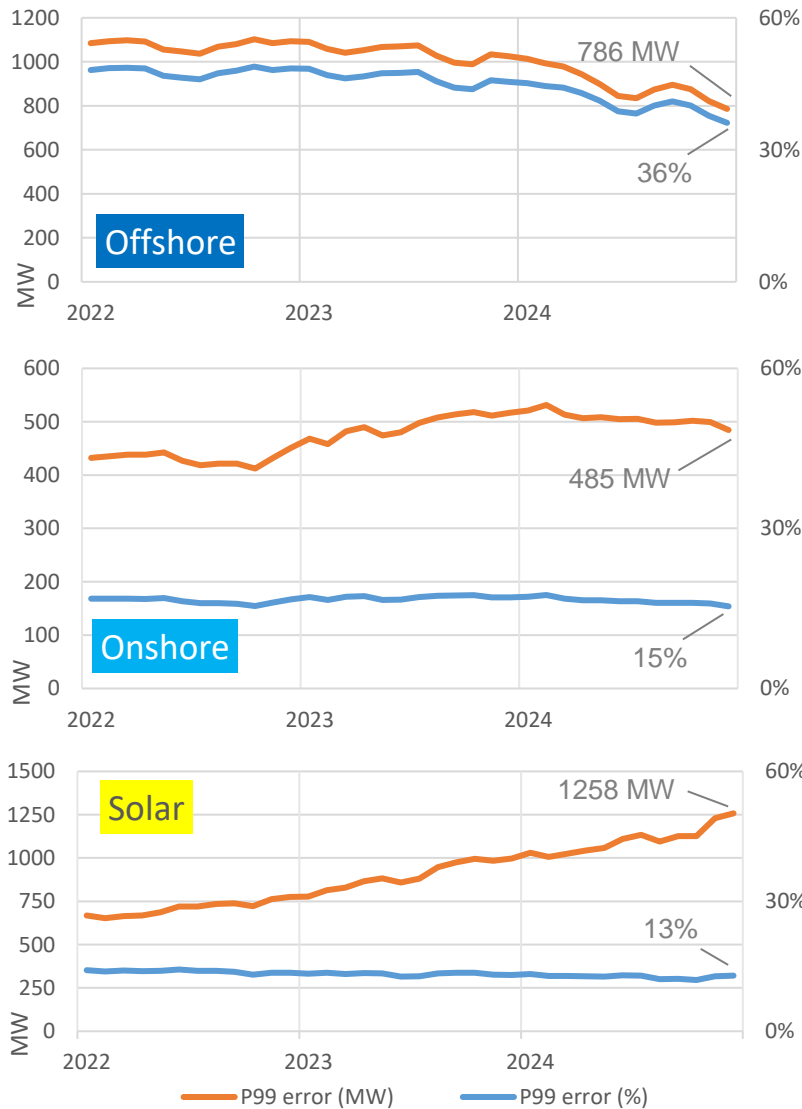## Scarcity levels triggered

Scarcity level 2 (Belgium depending on foreign energy & high market coupling) has been triggered again for the first time since 2018

Import needed to be adequate

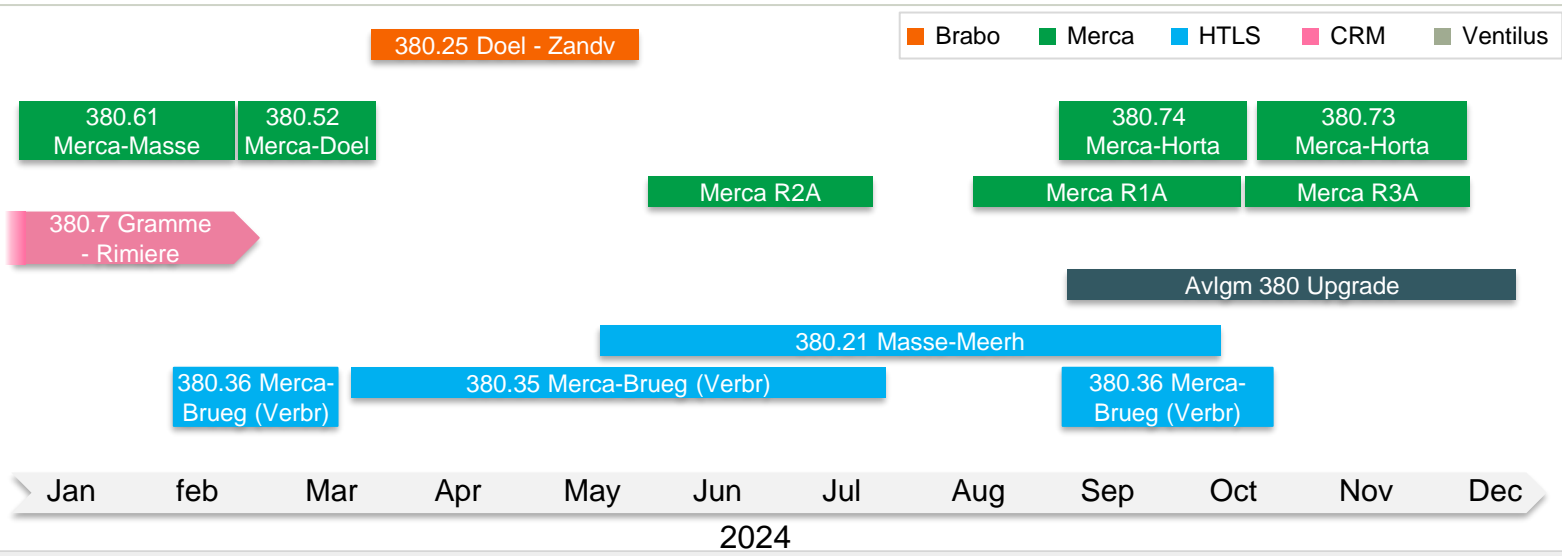## Renewable day-ahead forecasting errors
12-months moving averages

Offshore — 786 MW — 36%

Onshore — 485 MW — 15%

Solar — 1258 MW — 13%

P99 error (MW)   P99 error (%)

Infra Projects

| 380 kV | 220 kV | 150 kV |

2023

Jan	T6 Lillo 380/150
Feb	TIHA 2 Phase out
Mar	
Apr	Zandv PST1
May	Bypass Merca
Jun	380.30 on GIS D — 150.429
Jul	
Aug	
Sep	ZANDV GIS C : 380.29 HTLS & PST 2 — GIS D : PST1
Oct	380.36 HTLS: MERCA-BUGG (achieved 03/24)
Nov	380.30 HTLS
Dec	380.22 — T7 Lillo 380/150

2024

Jan	
Feb	
Mar	
Apr	
May	380.21 (Upgrade pylons)
Jun	
Jul	
Aug	
Sep	HTLS 380.35 MERCA-BUGG
Oct	MERCA380 (redistribution) — MSI 220.544 RIMIE-JUPIL
Nov	MSI RIMIE380
Dec	MSI HANNU150

FB market limiting branches

FB limiting CBs (as % of time)

- ———— No CB
- ———— < 1%
- ———— 1 - 3%
- ———— 3 - 10%
- ———— > 10%

380 kV Long-duration Outages

Legend: ■ Brabo ■ Merca ■ HTLS ■ CRM ■ Ventilus

- 380.25 Doel - Zandv
- 380.61 Merca-Masse | 380.52 Merca-Doel
- 380.74 Merca-Horta | 380.73 Merca-Horta
- Merca R2A
- Merca R1A | Merca R3A
- 380.7 Gramme - Rimiere
- Avlgm 380 Upgrade
- 380.21 Masse-Meerh
- 380.36 Merca-Brueg (Verbr)
- 380.35 Merca-Brueg (Verbr)
- 380.36 Merca-Brueg (Verbr)

Jan | feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

2024

Flow-based Market Coupling: Top 10 limiting axis (CWE)

|	Current (2024)		Reference (2023)	
1	[FR-D7] Vigy - Ensdorf	45,64%	[FR-D7] Vigy – Ensdorf	23,74%
2	[NL-D2] Meeden - Diele	14,78%	[NL-D2] Meeden – Diele	14,33%
3	[FR-FR] Creys - St-Vulbas – Genissiat	10,54%	[BE-FR] Gramme – Lonny	13,23%
4	[BE-FR] Gramme - Lonny	8,09%	[NL-BE] Zandvliet – Rilland	10,02%
5	[NL-D7] Maasb - Siers/Obzie	4,00%	[NL-D7] Maasb – Siers/Obzie	7,29%
6	[NL-NL] Krimp - Geert	2,87%	[NL-NL] Lelystad – Diemen	4,44%
7	[BE-FR] Avelgem - Avelin/Mastaing	1,94%	[D7-D7] Beurs – Lambstein	3,41%
8	[NL-BE] Zandv - Rilland	1,51%	[NL-BE] Maasb – Vanyk	3,31%
9	[NL-NL] Zwolle-Hengelo	1,46%	[D7-D7] Paffendorf – Sechtem	3,00%
10	[NL-BE] Maasb - Vanyk	1,43%	[BE-BE] Doel - Zandvliet	2,75%

Solar Eclipse dd.29/03/2025
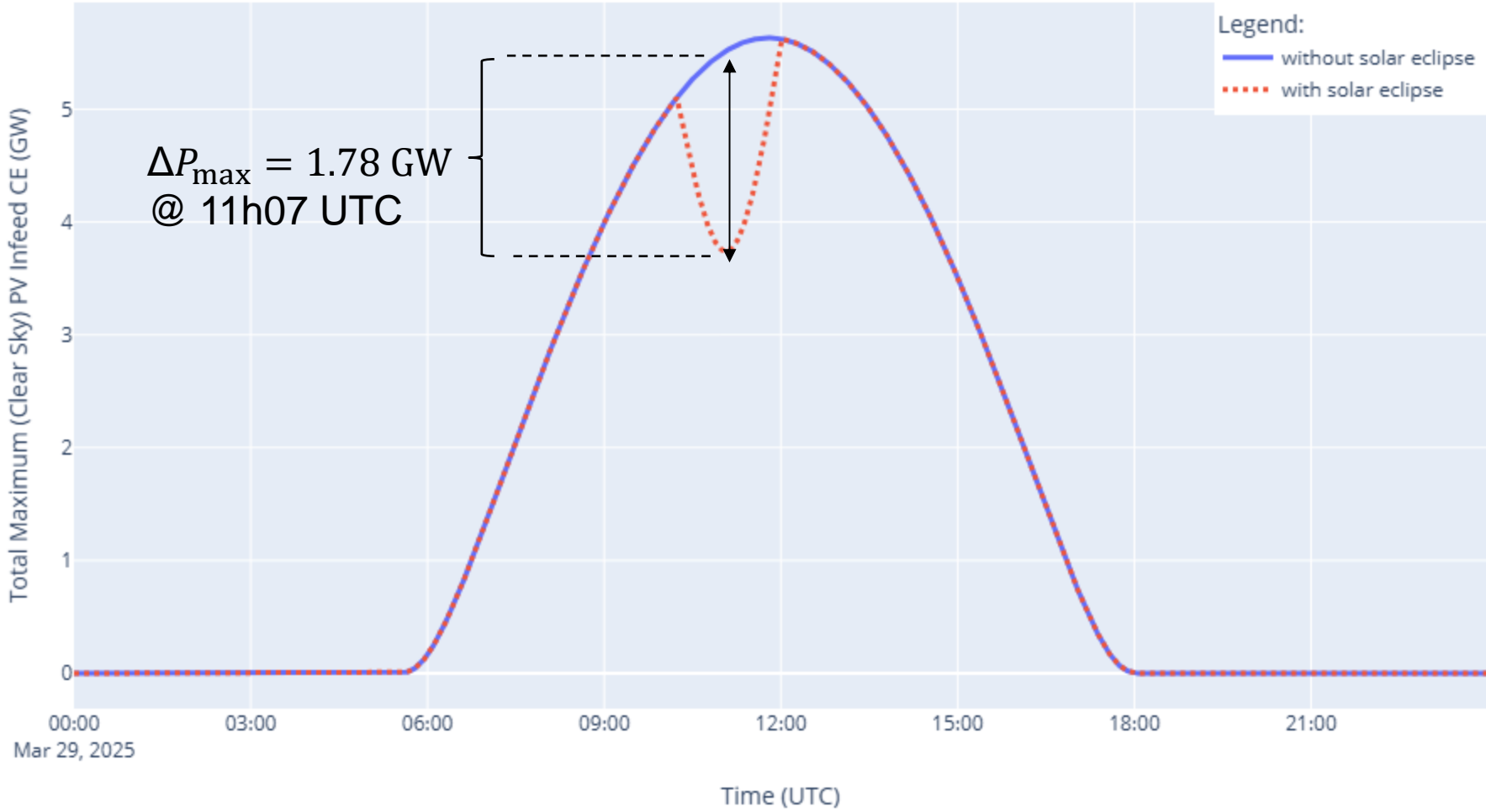
Operations

Kristof Geens

Partial Solar Eclipse on 29th of March 2025
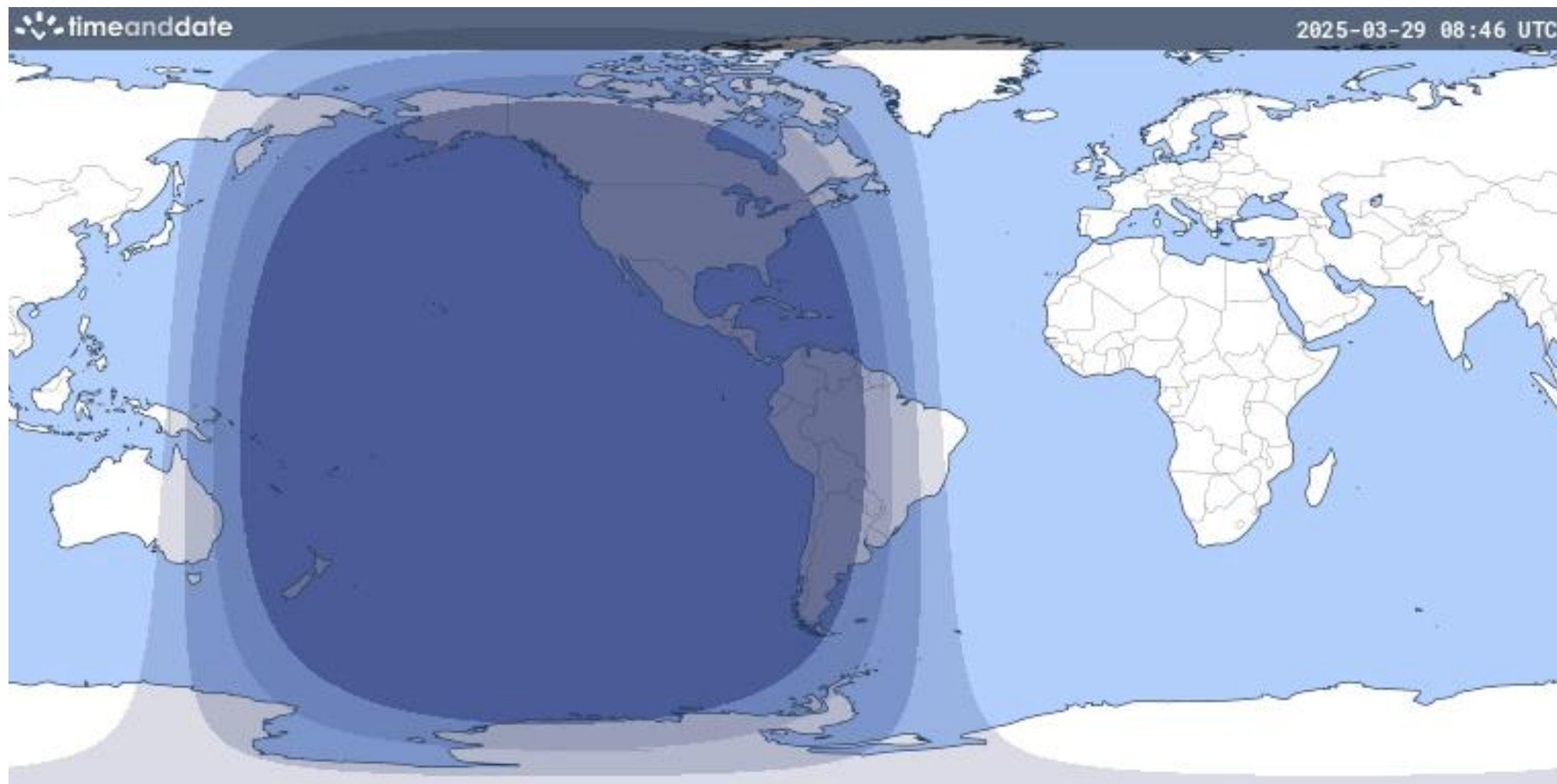
Production Time Series at Clear Sky Conditions – Total CE
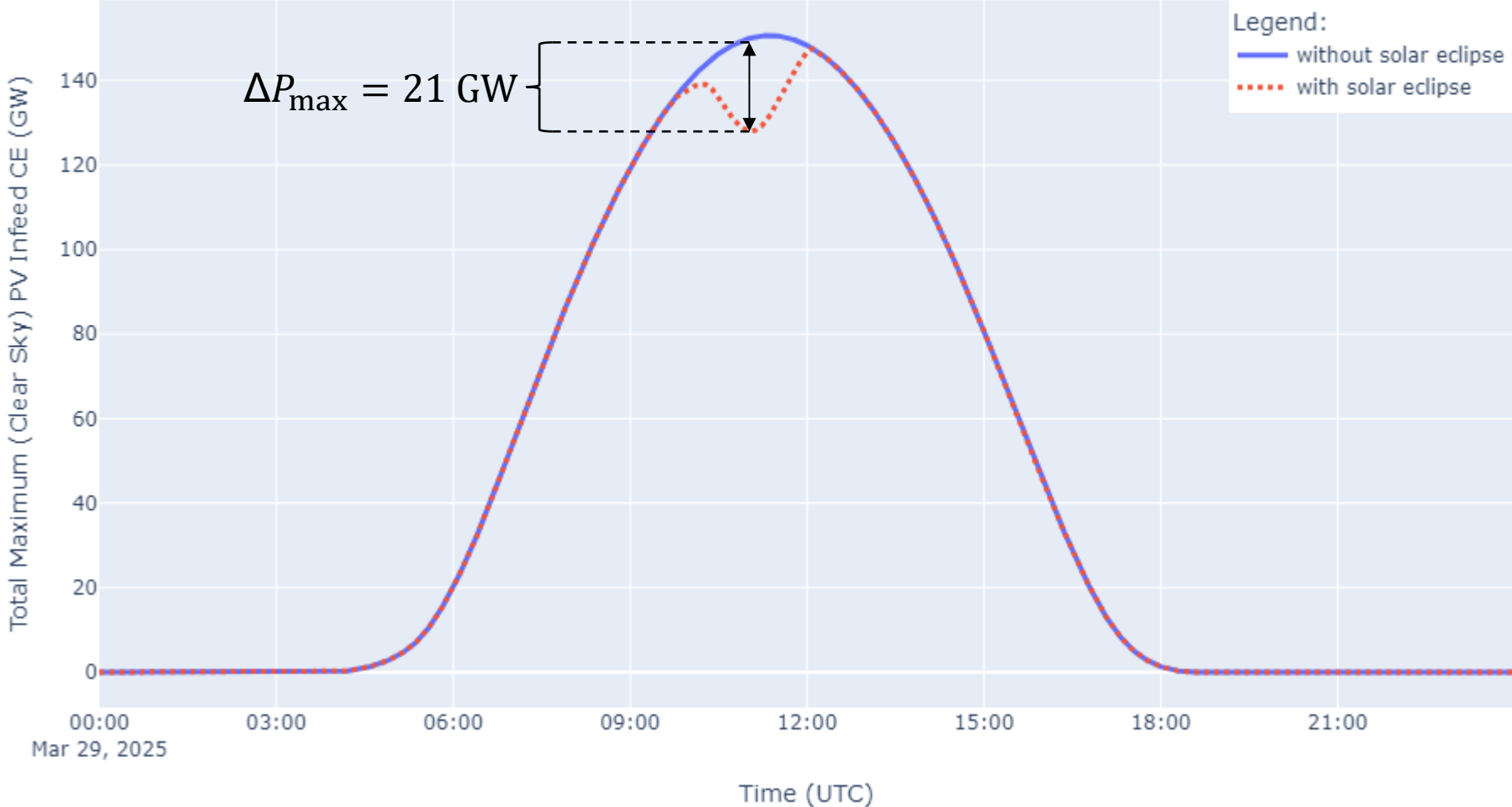
Production Time Series at Clear Sky Conditions – ELIA

Conclusions

- impact of partial solar eclipse is visible but moderate; the actual infeed from PV is highly depending on cloud coverage; these simulations assume clear sky conditions which may not happen in reality

- the maximum (clear sky condition in all of CE) reduction of PV infeed within (the analyzed parts of) CE, appears at around 12:00 AM (UTC+1 (Brussels Time)) and amounts to approx. 21 GW, *__1,78GW in BE @ 12h07__* (UTC+1)

- the maximum (clear sky condition in all of CE) change rate of PV infeed within (the analyzed parts of) CE, appears at around 08:00 am (UTC+1), <u>long before the solar eclipse</u>, and amounts to approx. +0.6 GW/min , *__+51MW/min in BE @ 12h59__* (UTC+1)

- Spain would (under clear sky conditions) be impacted strongest (in absolute numbers) by the solar eclipse with approx. 3.5 GW PV infeed reduction at 11:25 AM (UTC+1)

Actions taken by Elia

- Inform market parties through WG Grid (19/02/2025)

- Remind market parties through UMM (W-1)

- Preparatory alignment with other TSOs through appropriate ENTSO-E platforms

- Miticulous follow-up through own forecasting tools

Given the predictable nature of this event, potential impact on production portfolios is expected to be balanced by impacted BRPs.

AOB

- Next WG Grid meeting is on 16 June 13:00-16:00 (duration may change slightly depending on agenda)

ANNEX