USERS' GROUP

WG Grid

12/12/2024
8:30 – 11:00

Agenda

_	Domain	Agenda topic	From - Till	Presenter	Time (min)
1	General	Welcome & intro	8:30 - 8:35	***Chairs***	5
2	General	Approval of MoM & status action points	8:35 - 8:40	***Secretary***	5
4	EM	MTU transition overview for DA & ID timeframe	8:40 - 9:00	***Jean-Michel Reghem***	20
5	EM	Electricity trading arrangements with UK: status MRLVC and need for return to price coupling	9:00 - 9:30	***Stefano Meneghello***	30
6	EM	IDCC_C: status update	9:30 - 9:50	***Bernard Malfliet***	20
7	SSD	GUFlex: Highlights from the workshops	9:50 - 10:10	***Antoine Weynants***	20
8	SSD	MVAr: Highlights from the workshop of 10/12	10:10 - 10:20	***Carsten Bakker***	10
9	SSD	iCAROS: Highlights from the OPA design workshops	10:20 - 10:30	***Viviane Illegems***	10
10	SSD	CREG incentive on Future System Restoration	10:30 10:40	***Harold Guisset***	10
11	O	Winter Outlook	10:40 - 10:55	***Silvio Ferreira***	15
12	General	AOB & conclusions	10:55 - 11:00	***Chairs/Secretary***	5
				Total	**2:30**

Approval of Minutes & Action points

- Approval of the Minutes of Grid WG of 04/10/2024
- 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

MTU transition overview for DA & ID timeframe

European Markets

Jean-Michel Reghem

Transition of Market Time Units in DA and ID towards 15min

EB GL and Clean Energy Package
→ Imbalance Settlement Period (ISP)
→ SDAC and SIDC bidding zone and interconnection resolutions should be 15 min before max January 2025 (after agreed derogations)

- Belgian borders BE-NL and BE-DE in 15min in ID since December 2020
- BE-FR still in 30min because of ISP of France = 30min (derogation)
- Day-ahead: big bang approach until readiness of all parties → 2025

15 min ISP (local implementation)

- TSOs implement ISP locally in every bidding zone.

≥

15 min ID (CT + IDA)

- Simultaneous switch ID continuous + IDA.
- Already live in some bidding zones and borders. Organization in go-live windows for the remaining bidding zones and borders.
- Member testing will be scheduled for each window.

≥

15 min DA

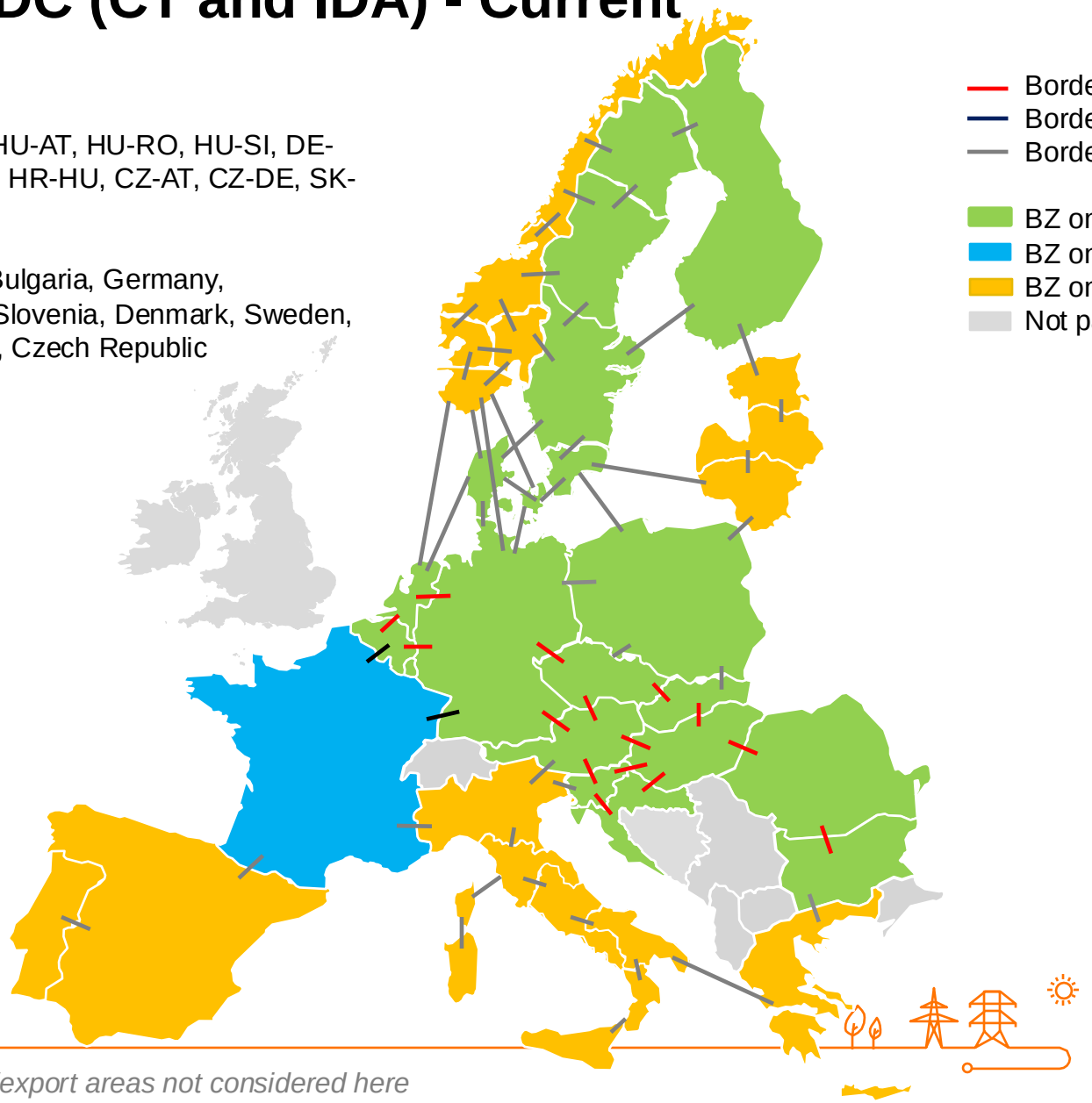
- Dedicated member testing phase will be planned.
- One go-live moment ('big-bang approach').
- This switch ends the transition to 15'.

→ ISP 15min switch is a prerequisite for 15min in SIDC which is a prerequisite for 15min in SDAC

15 min MTU in SIDC (CT and IDA) - Current

- Borders: DE-BE, BE-NL, DE-NL, HU-AT, HU-RO, HU-SI, DE-AT, SI-AT, SK-HU, RO-BG, SI-HR, HR-HU, CZ-AT, CZ-DE, SK-CZ

  Bidding zones: Austria, Belgium, Bulgaria, Germany, Netherlands, Romania, Slovakia, Slovenia, Denmark, Sweden, Finland, Croatia, Hungary, Poland, Czech Republic

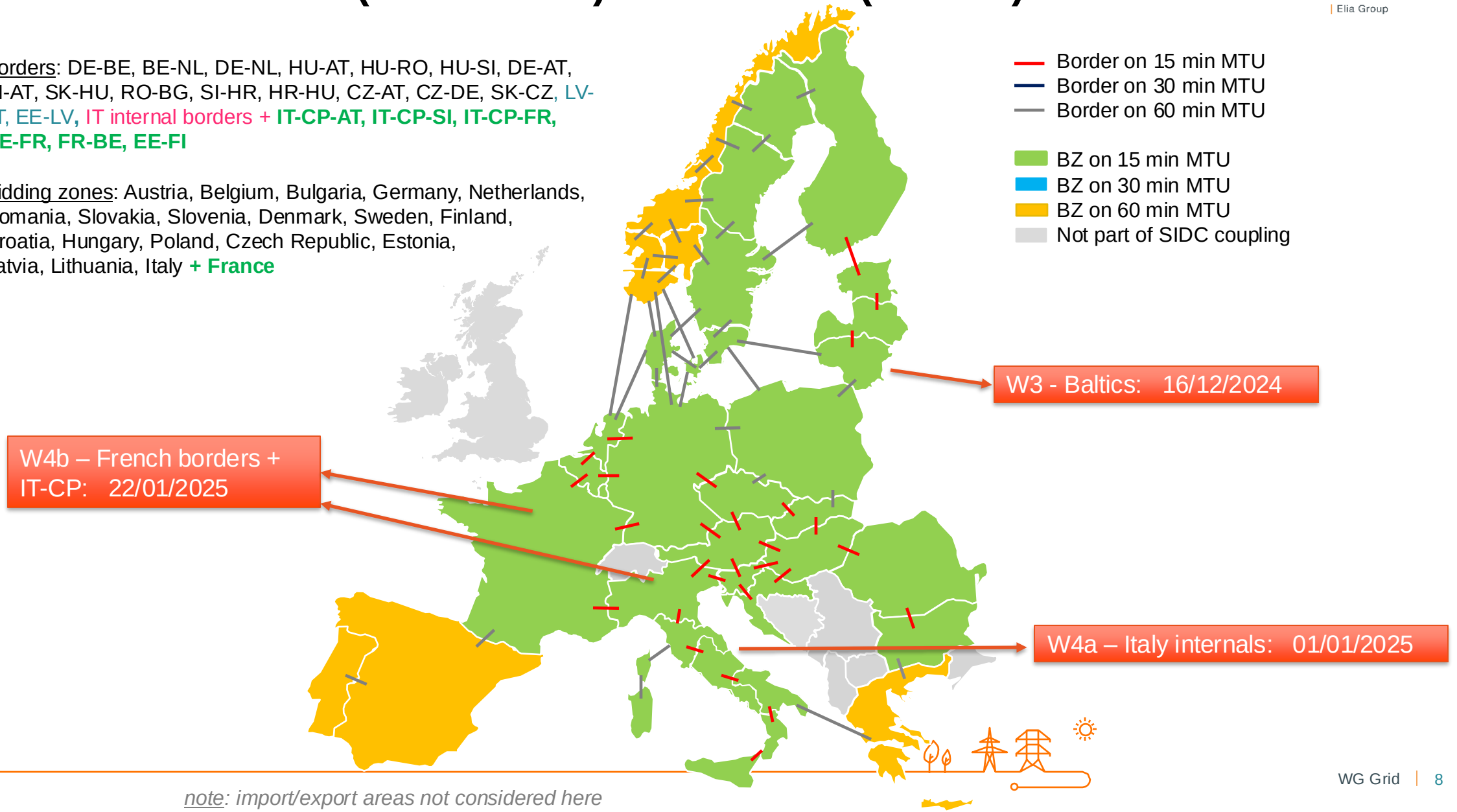


note: import/export areas not considered here

15 min MTU in SIDC (CT and IDA) – After W4b (22/1/25)

- Borders: DE-BE, BE-NL, DE-NL, HU-AT, HU-RO, HU-SI, DE-AT, SI-AT, SK-HU, RO-BG, SI-HR, HR-HU, CZ-AT, CZ-DE, SK-CZ, LV-LT, EE-LV, IT internal borders + **IT-CP-AT, IT-CP-SI, IT-CP-FR, DE-FR, FR-BE, EE-FI**

  Bidding zones: Austria, Belgium, Bulgaria, Germany, Netherlands, Romania, Slovakia, Slovenia, Denmark, Sweden, Finland, Croatia, Hungary, Poland, Czech Republic, Estonia, Latvia, Lithuania, Italy **+ France**



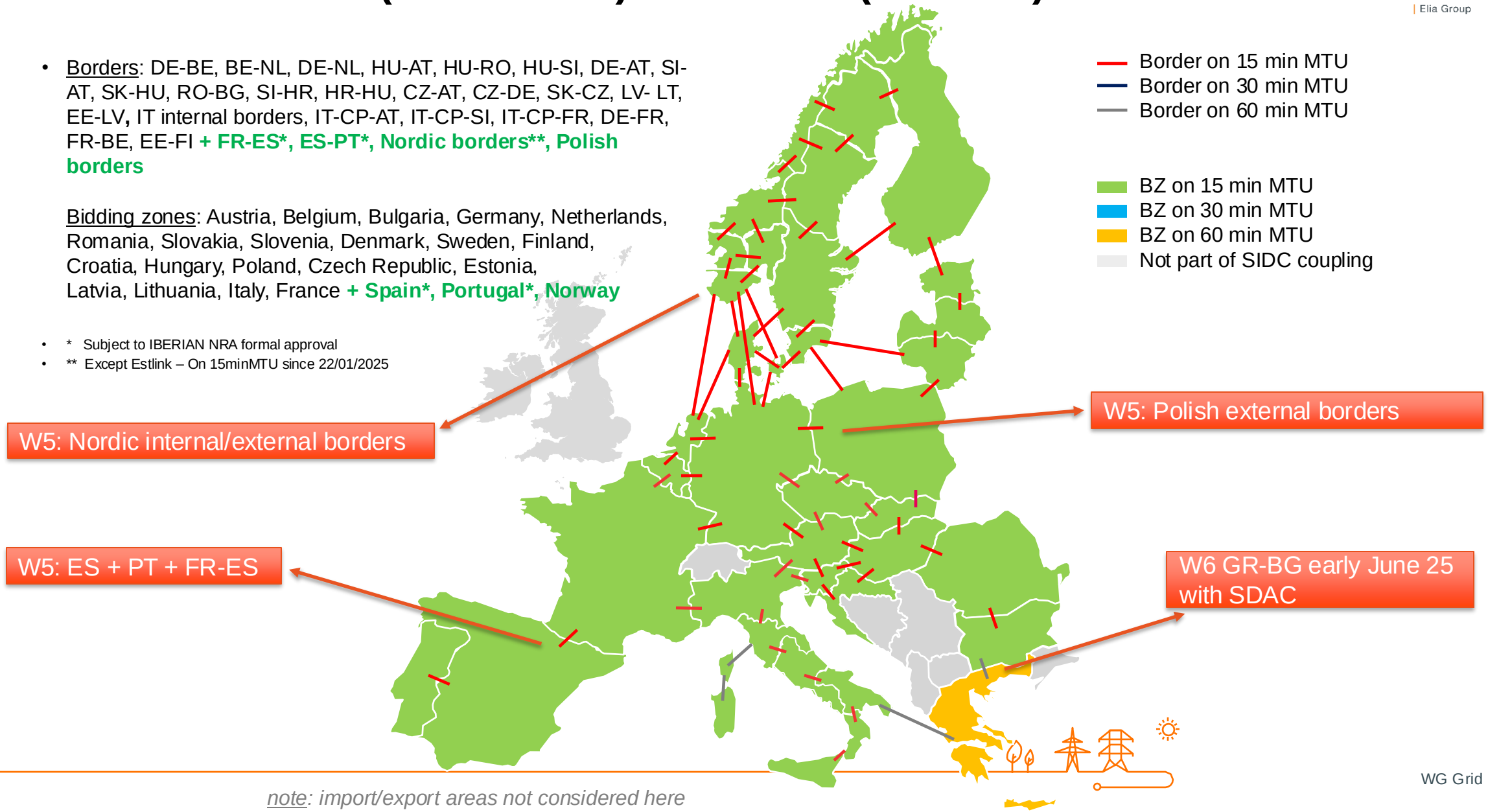
note: import/export areas not considered here

15 min MTU in ID (CT and IDA) – After W5 (18/03/25)

- Borders: DE-BE, BE-NL, DE-NL, HU-AT, HU-RO, HU-SI, DE-AT, SI-AT, SK-HU, RO-BG, SI-HR, HR-HU, CZ-AT, CZ-DE, SK-CZ, LV- LT, EE-LV, IT internal borders, IT-CP-AT, IT-CP-SI, IT-CP-FR, DE-FR, FR-BE, EE-FI **+ FR-ES*, ES-PT*, Nordic borders**, Polish borders**

  Bidding zones: Austria, Belgium, Bulgaria, Germany, Netherlands, Romania, Slovakia, Slovenia, Denmark, Sweden, Finland, Croatia, Hungary, Poland, Czech Republic, Estonia, Latvia, Lithuania, Italy, France **+ Spain*, Portugal*, Norway**

- * Subject to IBERIAN NRA formal approval
- ** Except Estlink – On 15minMTU since 22/01/2025



note: import/export areas not considered here

SIDC – 15MTU transition planning in ID (and ISP)

W3: 16/12/2024
W4a: 1/1/2025
W4b: 22/1/2025
W5: 18/03/2025
W6: June 2025 with SDAC

Go-live per bidding zone

Bidding zone	15 min ISP	Planned Go-live date ID CT & IDA
Austria	Implemented	Implemented
Belgium	Implemented	Implemented
Bulgaria	Implemented	Implemented
Croatia	Implemented	Implemented
Czech Republic	Implemented	Implemented
Denmark (All BZs)	Implemented	Implemented
Estonia	20/11/2024	16/12/2024
Finland	Implemented	Implemented
France	01/01/2025	22/01/2025
Germany	Implemented	Implemented
Greece	Implemented	June 25 aligned with SDAC
Hungary	Implemented	Implemented
Italian BZ	01/01/2025	01/01/2025
Latvia	20/11/2024	16/12/2024
Lithuania	01/10/2024	16/12/2024
Netherlands	Implemented	Implemented
Northern Ireland	N/A	30' MTU in January
Norway (All BZs)	18/03/2025	18/03/2025
Poland	Implemented	Implemented*
Portugal	30/11/2024	18/03/2025
Republic Of Ireland	N/A	30' MTU in January
Romania	Implemented	Implemented
Slovakia	Implemented	Implemented
Slovenia	Implemented	Implemented
Spain	01/12/2024	18/03/2025
Sweden (All BZs)	18/03/2025	18/03/2025

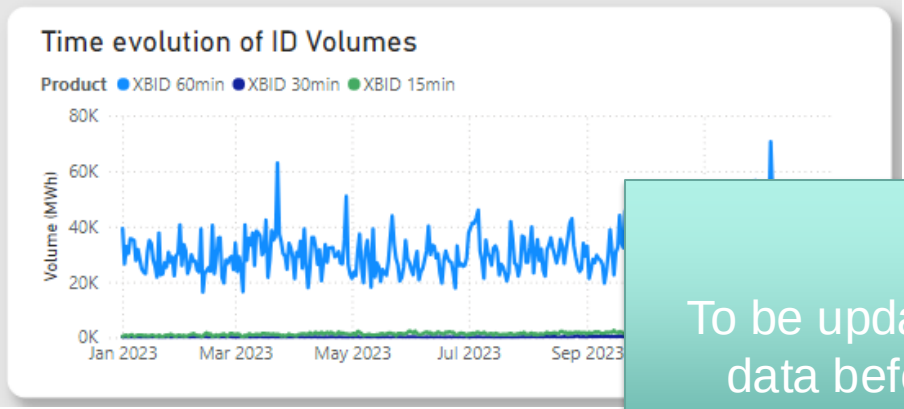
Go-live per border

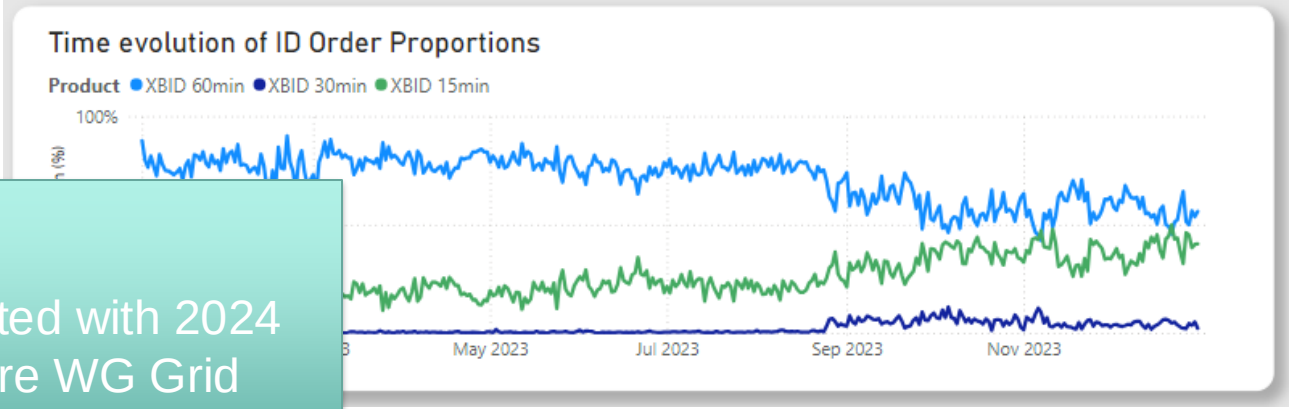
Border	Planned Go-live date ID CT & IDA	SIDC GL window
BE-NL	Implemented	Implemented
CZ-AT	Implemented	Implemented
CZ-DE	Implemented	Implemented
CZ-PL	18/03/2025	W5
DE-AT	Implemented	Implemented
DE-BE	Implemented	Implemented
DE-DK1	18/03/2025	W5
DE-DK2	18/03/2025	W5
DE-FR	22/01/2025	W4b
DE-NL	Implemented	Implemented
DE-NO2	18/03/2025	W5
DE-PL	18/03/2025	W5
DK1-DK2	18/03/2025	W5
DK1-NL	18/03/2025	W5
DK1-NO2	18/03/2025	W5
DK1-SE3	18/03/2025	W5
DK2-SE4	18/03/2025	W5
EE-FI	22/01/2025	W4b
EE-LV	20/11/2024	W3
ES-PT	18/03/2025	W5
FI-SE1	18/03/2025	W5
FI-SE3	18/03/2025	W5
FR-BE	22/01/2025	W4b
FR-ES	18/03/2025	W5
GR-BG	Q2 2025 same as SDAC	W6 aligned with SDAC
HR-HU	Implemented	Implemented
HU-AT	Implemented	Implemented
HU-RO	Implemented	Implemented
HU-SI	Implemented	Implemented

Border	Planned Go-live date ID CT & IDA	SIDC GL window
IT internal	01/01/2025	W4a
IT-CP-AT	22/01/2025	W4b
IT-CP-FR	22/01/2025	W4b
IT-CP-SI	22/01/2025	W4b
IT-GR-GR	N/A	Exception (60min)
LT-PL	18/03/2025	W5
LT-SE4	18/03/2025	W5
LV-LT	20/11/2024	W3
NO1-NO2	18/03/2025	W5
NO1-NO3	18/03/2025	W5
NO1-NO5	18/03/2025	W5
NO1-SE3	18/03/2025	W5
NO2-NL	18/03/2025	W5
NO2-NO5	18/03/2025	W5
NO3-NO4	18/03/2025	W5
NO3-NO5	18/03/2025	W5
NO3-SE2	18/03/2025	W5
NO4-SE1	18/03/2025	W5
NO4-SE2	18/03/2025	W5
PL-SE4	18/03/2025	W5
RO-BG	Implemented	Implemented
SE1-SE2	18/03/2025	W5
SE2-SE3	18/03/2025	W5
SE3-SE4	18/03/2025	W5
SI-AT	Implemented	Implemented
SI-HR	Implemented	Implemented
SK-CZ	Implemented	Implemented
SK-HU	Implemented	Implemented
SK-PL	18/03/2025	W5

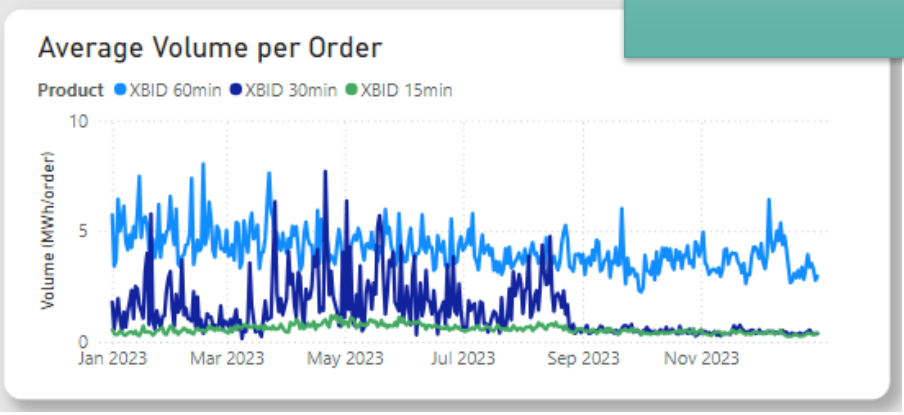
ID statistic on 15min usage 2023 BE IDCT – EPEX only

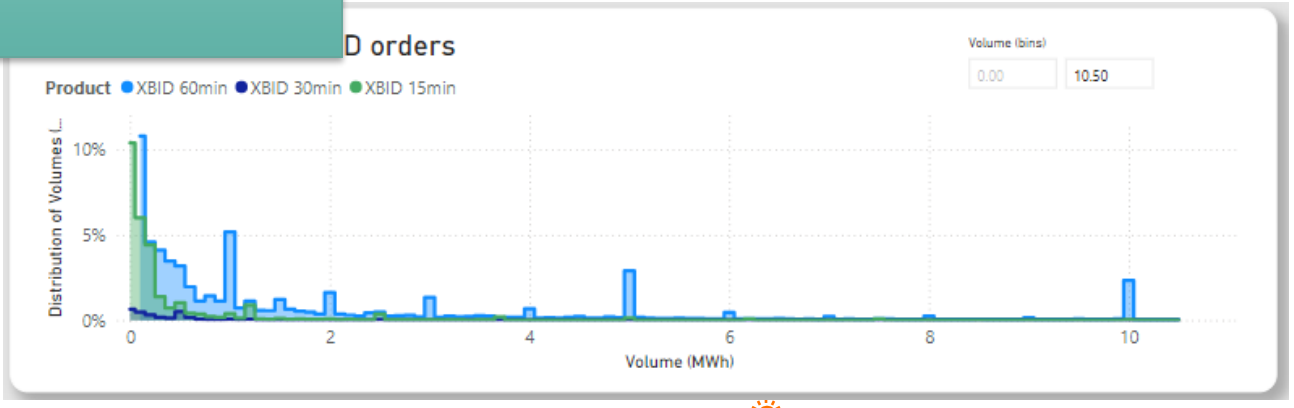
ID Volume Evolution (%)	ID Orders Evolution (%)
+26.36%	+118.4%



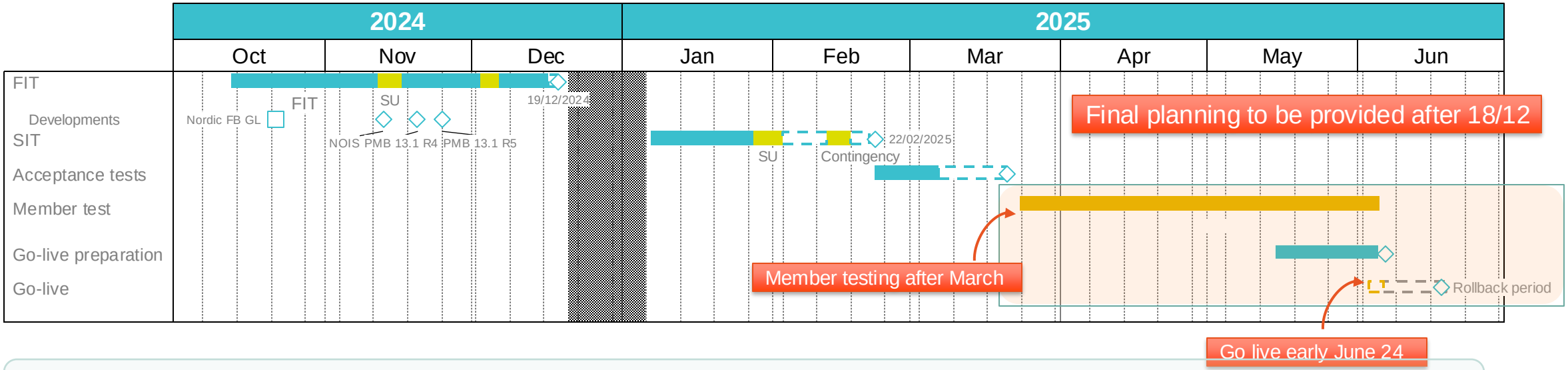


To be updated with 2024 data before WG Grid





SDAC: Transition to 15min



- Functional testing started in October 2024 with most NEMOs and TSOs, including regional CCR providers and JAO. Initial testing encountered several critical issues in the first weeks. For several processes, testing with workarounds was needed due to systems not yet ready. → Initial communicated go-live date in March 2025 was considered no longer feasible by MCSC. In addition, discussion with market parties led to a need to more time for member testing and go live preparation.

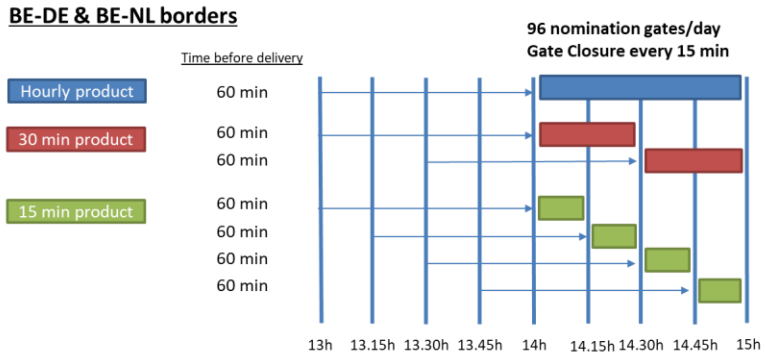
- In MESC 3/12 SDAC NEMOs and TSOs announced that **15min MTU go live in SDAC will take place in early June 2025** & **central member tests will start at the end of March**. Local member tests are planned by each NEMO and will start earlier. Such go live date incl. 2 weeks rollback would be compatible with Nordic freeze and will let more time for market parties testing while ensuring that the DA process is robust enough.
- NEMOs and TSOs are working on a detailed plan for testing and go-live which will be approved by MCSC of 18/12/2024 and shared with stakeholders afterwards.

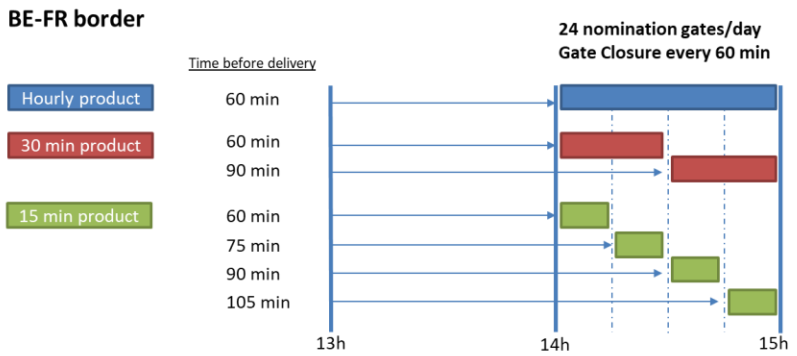
Focus on Belgium – Status after June 2025

- All SDAC and SIDC borders in 15min MTU
- Product offered by Belgian NEMOs :

SIDC Continuous	SIDC IDAs	SDAC
• 3 independent markets (**no change** – no CP matching) - 15min - 30min (FR/BE/NL/DE) - 60min + Block / complex products	• Only 15min products + block orders / limited complex products (**no change** – CP matching)	• 15min products (new) • 60 min products (**no change**) + Block orders and complex products + cross product matching (new)

- Unlike BE-DE/BE-NL with 96 nomination gates, **BE-FR** will keep 24 nomination gates in SIDC IDCT until 2026. RTE cannot move to 96 gates until TERRE platform is phased out.





- **BE-GB**: following public consultation of Nemolink → introduction of 30min / 48 nomination gates for the **ID explicit auctions** for Q4 2025 (Planning to be confirmed officially before summer – Assessment ongoing)

Electricity trading arrangements with UK: status MRLVC and need for return to price coupling

European Markets

Stefano Meneghello

Trade and Cooperation Agreement – Market coupling between EU and UK

The EU (incl. Norway) and the UK have great offshore wind ambitions in the North Seas

Hybrid Interconnectors are going to play a vital role in bringing offshore wind generation onshore, but…

- The return of investment on Hybrid Interconnectors is **strongly dependent on the allocation regime for cross-zonal capacity on the Hybrid Interconnector**
- **Uncertainty** around the allocation regime translate into **investment risks** for Hybrid Interconnectors

⚠

Without Hybrid Interconnectors the offshore wind ambition cannot be realised

Due to long lead times, the investment decisions for the first (hybrid) interconnectors and offshore wind developments projects for 2030-2035 must be taken now to ensure the realization of the offshore wind ambition

➔ **Certainty on the allocation regime is urgently needed**

- **Price coupling**
  - ✓ gives adequate certainty for investment decisions as it ensures **efficient price formation** in the offshore bidding zone & **efficient use of grid infrastructure**
  - ✓ enables the implementation of European's target model: **offshore bidding zones & Advanced Hybrid coupling with flow-based**
  - ✓ allows **efficient and consistent allocation across different timeframes**
  - ✓ does not jeopardize robustness of operational price coupling processes

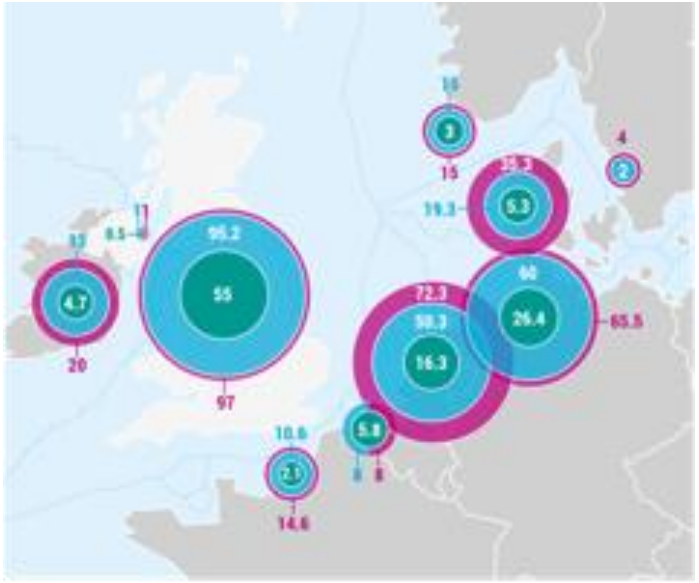
- **Explicit allocation & Multi-Regional Loose Volume coupling**
  - **cannot** provide this certainty
  - fall short in delivering efficient prices in offshore bidding zones & efficient allocation of cross-zonal capacity
  - Is incompatible with the European target model

Pre-read

Ambitions for offshore wind in the North Sea

Great ambitions for offshore wind in EU, UK, Norway

TSOs plan to connect more than 330 GW of offshore wind generation capacity in the North Seas by 2050 (**300 GW more than today**)



Offshore wind capacity for 2030, 2040, 2050.
Source: ENTSO-E ONDP Northern Seas report

Key role for hybrid interconnectors

The maximize efficiency, many Offshore Wind Platforms will be connected to several other bidding zones, resulting in a '**meshed' network of HVDC interconnectors and Offshore Wind Platforms**.

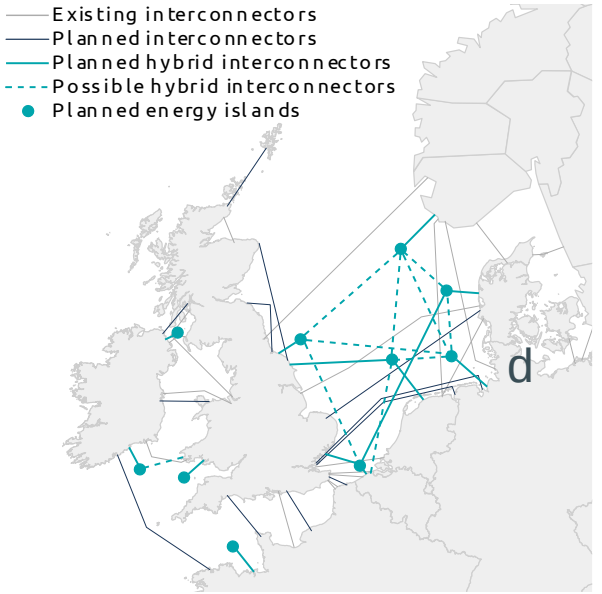
HVDC interconnectors with Offshore Wind Platforms are called Hybrid or Multi-Purpose Interconnectors. Such interconnectors allow **both to transmit offshore wind power onshore and power exchanges between bidding zones**.

Financial uncertainty hinders investments in offshore grid infrastructure

As hybrid interconnectors are high-capital investments, uncertainty on the allocation regime translates into higher financial risk and the return of investment is jeopardised.

Investments in offshore grid infrastructure are a prerequisite for investments in offshore wind generation capacity!

For infrastructure investments, TSOs typically rely on cost-benefit analysis (CBA) based on price-coupling. Positive CBAs can turn negative if the allocation regime is less efficient than price coupling.



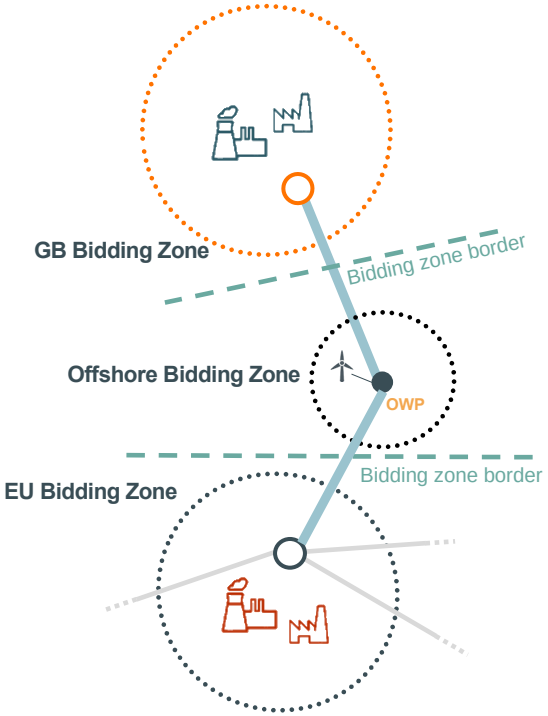
Existing and planned interconnectors and Hybrid Interconnectors in the North Seas.
Sources: ENTSO-E TYNDP 2022 and ENTSO-E ONDP

Uncertainty around allocation regimes hinders investments in offshore grid infrastructure and offshore wind

Offshore Bidding Zones

Pre-read

Offshore bidding zone setup



The *Offshore Bidding Zone* approach means that an Offshore Wind Platform is its own bidding zone and is priced separately from its connecting onshore bidding zones

- fosters efficient allocation of scarce cross-zonal capacity – both onshore and offshore
- limits gaming opportunities
- provides the highest socio-economic welfare
- supports secure operations of the grid
- In line with principle of bidding zones delineation along structural congestion
- compliance with “70% rule”
- is supported by North Sea TSOs, European Commission, ENTSO-E and ACER

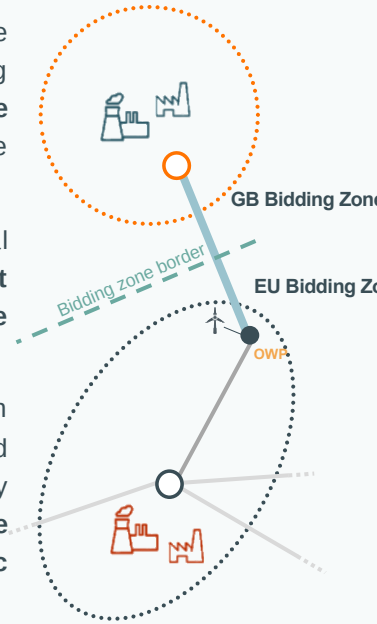
Home market setup

The alternative ***home market*** **setup** – where offshore wind platforms are considered part of the onshore bidding zone – **does not offer the same advantages** as the offshore bidding zone setup.

In a home market setup, cross-zonal capacity calculation processes **must consider a forecast of the offshore wind generation**.

In case this forecast is not aligned with market results or with the actual wind output, the interconnector is necessarily over- or under-used, **leading to negative operational or economic consequences**.

Additionally, the home market setup **offers gaming opportunities** related to aggravating congestion on the interconnectors to/from the Offshore Wind Platform.



Offshore bidding zones are a critical enabler for the efficient integration of hybrid interconnectors into electricity markets

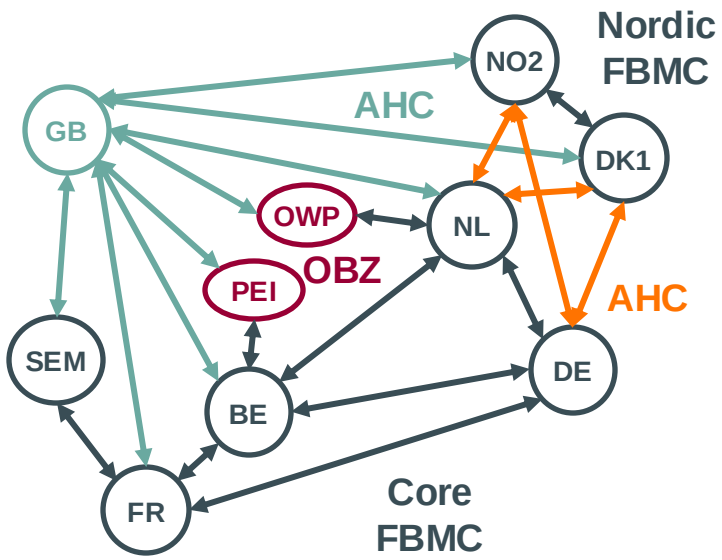
The offshore Bidding Zone approach has been notably been confirmed by several key involved TSOs in their Expert Paper II

The Internal Electricity Market target model and Price Coupling – The Good

Price coupling in the EU and Norway

The Internal Electricity Market Model (IEM) is based on clearing of energy and allocation of cross-zonal capacity simultaneously. Its foundations are:

- Single Day-Ahead Coupling (SDAC) and Single Intraday Coupling (SIDC)
- Cross-zonal capacity calculation and allocation based on flow-based approach (with Advanced Hybrid Coupling)
- Complemented by financial transmission rights in the long-term timeframe for hedging purposes



Flow-based and Advanced Hybrid Coupling

Cross-zonal capacity on offshore grid infrastructure is **most efficiently allocated through flow-based with Advanced Hybrid Coupling.**

- Core CCR already applies flow-based in the day-ahead timeframe and is about to implement Advanced Hybrid Coupling
- Nordic CCR will implement flow-based in day-ahead timeframe by end of 2024 using Advanced Hybrid Coupling

The use of flow-based and Advanced Hybrid Coupling is only possible with full price coupling!

Only price coupling

- **can simultaneously clear energy and allocate cross-zonal capacity**
- **utilises grid infrastructure most efficiently**
- **leads to solid price formation, especially in Offshore Bidding Zone**
- **creates certainty for investments in both offshore grid infrastructure and offshore wind**

Price coupling with flow-based and Advanced Hybrid Coupling provides certainty for investments in offshore grid infrastructure and offshore wind

Pre-read

Explicit allocation – The Bad

Explicit allocation on EU-GB bidding zone borders

Since Brexit, cross-zonal capacity between EU (incl. Norway) and GB is allocated via explicit auctions, while energy is traded on separate markets.

By design, explicit allocation cannot make use Advanced Hybrid Coupling and cannot consider additional security constraints (such as ramping on HVDC interconnectors).

Incompatibility with Offshore Bidding Zones

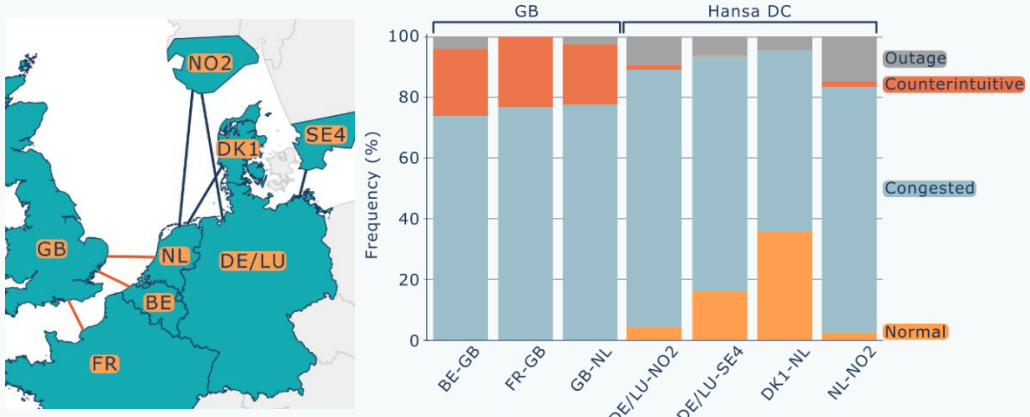
Price formation in Offshore Bidding Zones is particularly challenging when its bidding zone borders are allocated explicitly. Offshore Bidding Zones exhibit only supply at zero marginal cost, while the demand necessary to reach supply-demand equilibrium is obtained through exports. Hence,

- the price is essentially a function of the value of the demand from (adjacent) onshore bidding zones (export)
- Demand from onshore bidding zones is brought to the Offshore Bidding Zone through explicit allocation
- Bidding behaviour with explicit auctions relies on the forecasted price differences between onshore and the Offshore Bidding Zone

Showcase: Inefficiencies of explicit allocation

Explicit allocation is less efficient than implicit allocation via price coupling:

- The usage rate of transmission capacity is lower for explicit auctions (below 75% compared to 90% for implicit)
- Explicit auctions result in energy flowing in the wrong economic direction, .i.e. from an expensive to a cheaper bidding zone (~22% of time in 2023)



Frequency of schedules leading to uncongested, congested or counterintuitive market outcomes incl. outages. ENTSO-E data from entire year 2023. Considered bidding zone borders within SDAC (DK1-NL, NL-NO2, DE/LU-NO2, DE/LU-SE4) and EU-GB (BE-GB, FR-GB, GB-NL)

Explicit auctions are incompatible with Advanced Hybrid Coupling and are intrinsically flawed with the Offshore Bidding Zone setup

Multi-regional loose volume coupling – The Ugly

Pre-read

MRLVC presents several implementation and operational challenges

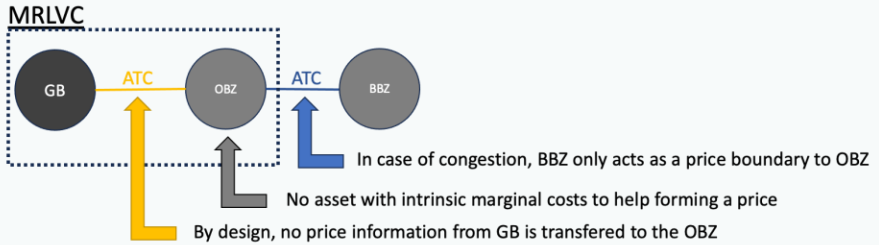
Following Brexit, the EU-UK Trade and Cooperation Agreement (TCA) introduces the concept of Multi-Region Loose Volume Coupling (MRLVC) as the allocation regime for cross-zonal capacities on bidding zone borders between GB and the EU for the day-ahead timeframe. MRLVC has been thoroughly assessed by the group of impacted TSOs via a Cost-Benefit Analysis. Although MRLVC has the potential to increase socio-economic welfare compared to explicit auctions, it presents several challenges:

- It is complex to implement and will significantly impact the well-functioning SDAC and GB markets, including the increased risk of SDAC decoupling, hence decreasing SDAC robustness.
- A reliable forecasting methodology does not yet exist, and is by nature challenging (particularly for atypical market circumstances, for which efficient allocation is particularly important)
- Congestion income from interconnectors is expected to be reduced due to MRLVC, resulting in reduced return on investment for interconnections with GB (especially Hybrid Interconnectors)
- MRLVC needs to be refined/adapted to cope with Hybrid Interconnectors and Offshore Bidding Zones as it was originally not intended to do so

Additional challenges of MRLVC related to Offshore Bidding Zone and Advance Hybrid Coupling

MRLVC (and Explicit allocation) are less efficient than price coupling:

- In presence of congestion, the price formation in an Offshore Bidding Zone is intrinsically flawed, as no (or very little) demand is present



- MRLVC can only consider a radial grid, where all bordering bidding zone borders are treated independently from each other, each individually connecting to GB, even though they are heavily interconnected and coupled via flow-based
- MRLVC is not compatible with Advanced Hybrid Coupling, as flows in this case are entirely determined by the forecasts required by MRLVC – and is therefore not a market-based mechanism

MRLVC is incompatible with flow-based, Advanced Hybrid Coupling and Offshore Bidding Zones

Conclusion – Only one way forward

IEM target model

	Price coupling	Explicit auctions	MRLVC
Compatible with offshore bidding zones	+	−	+ −
Compatible with Advanced Hybrid Coupling	+	−	−
Compatible with Financial Transmission Rights on offshore bidding zone bidding zone borders in long-term timeframe	+	−	−
Congestion rent for interconnector	+	+ −	−
Optimal utilisation of interconnector capacity	+	−	−
Robust price formation in offshore bidding zone	+	−	+ −
Liquidity in offshore bidding zone	+	−	+ −
Effectiveness of supporting scheme (e.g. CfD)	+	+ −	+ −
Gaming opportunities	+	−	+
Compatibility with Single Day-Ahead Coupling[1]	+	+ −	−
Compatibility with Single Intraday Coupling[1]	+	+ −	⚠ [2]

The full analysis is available on [Elia's technical study on market coupling solutions with UK]

Only price coupling provides the necessary certainty for investments in offshore grid infrastructure and is compatible with the IEM target model

[1] Timings, governance and robustness of operations incl. backup and fallback processes (i.e. mitigated decoupling risk)
[2] MRLVC in the intraday timeframe is not a realistic option due to tight process timings

Political letter and SPC

Broad coalition of energy associations and TSOs calls upon political leaders to prioritise enhanced electricity trade between UK and EU to fully develop the offshore potential of the North Seas

11 October 2024

The time is now to pave the way for efficient electricity exchanges between the EU and the UK

A joint letter from key associations and companies across the energy sector towards the European and UK governments

Reaching the EU's & UK's respective ambitions for a competitive green transition

Political leaders in the EU and the UK have reconfirmed their respective ambition for the Green Transition and for closer cooperation in the field of energy. This political willingness to commonly find solutions for the offshore developments of the North Seas was also recognised in the North Seas Energy Cooperation (NSEC) 2023-2024 Action Agenda. As companies and associations committed to deliver the energy transition in the UK and Europe, we strongly support this. In particular it provides an opportunity to resolve a number of crucial outstanding issues in the EU-UK energy relationship like inefficient market coupling or CBAM. If these issues are fixed, it would create massive benefits to both consumers and industry, as well as help the EU, EEA and UK meet their respective climate and energy targets. The issues around Carbon Border Adjustment Mechanism (CBAM) have already been highlighted by different studies, but the implementation of linking the EU and UK ETS is still pending and should be progressed as a matter of urgency. Another key element, which is the focus of this letter, is to establish more efficient electricity arrangements between the European Internal Energy Market (IEM, which includes Norway) and the GB market. This is of particular urgency to unlock investment in offshore generation and grid infrastructure required to achieve the goal of fully exploiting the renewable energy potential in the North Seas. Efficient cross-border trading arrangements would also provide huge gains in social welfare for both the EU and UK consumers, meaning that the costs of meeting the energy objectives can be significantly reduced.

Developing the offshore grid as an essential enabler

Efficient, fair and open energy markets are absolutely critical to achieving the aims of optimal operation and investment. In order to secure the required investments to transform the North Seas into the Green Power Plant of Europe, which could run into the billions, investors need confidence that their assets will be operated in the most optimal and efficient way – based on trusted market principles. These are investments with long lead-times, in particular for offshore hybrid interconnectors (combining offshore renewable integration and interconnection between countries). Clarity on an evolution towards an improved market framework is urgently needed in order for generation and transmission infrastructure to be developed on time to reach the declared political ambitions. The Draghi report also highlights the importance of investment in grid infrastructure to reinvigorate EU competitiveness and the Letta report specifically mentions the need for finding a balanced and mutually beneficial framework to strengthen the ties with the UK.

1

Joint letter

TECHNICAL STUDY

Need for electricity market price coupling with UK to support offshore investments in the North Seas.

Technical study of the shortcomings of Explicit Allocation and Multi-Regional Loose Volume Coupling, and thus the need for re-implementing a system of price coupling between the EU (including Norway) and the GB Market to support investments in offshore infrastructure in the North Seas

Elia technical study

[Broad coalition of energy associations and TSOs calls upon political leaders to prioritise enhanced electricity trade between UK and EU to fully develop the offshore potential of the North Seas]

Serviced Price Coupling (SPC): general principles (1/2)

Main concept

A distinct service extension to include interconnectors to GB (and North Sea hubs) in the SDAC capacity allocation process.

a. GB market is not joining SDAC but is instead receiving a clearly defined (and limited) service provided by SDAC and under EU control.

b. Existing SDAC parties are responsible for the operation of the service, with UK interconnector TSOs and power exchanges being the service recipients. For example, NEMOs act on behalf of GB market Power exchanges (similar to existing Serviced NEMO model used in Europe today), and the bordering national TSOs act on behalf of their interconnectors to GB

c. SDAC parties will be entitled to charge GB market parties reasonable service charges for providing this service. These charges will be transparent and in-line with those paid by EU SDAC parties. This should ensure a fair contribution from GB towards SDAC costs directly associated with the GB service provision, while allowing GB to give its consumers and producers access to the benefits of SDAC at a fair price

Changes to the TCA

The arrangements require only limited changes, fully respecting the existing EU regulatory framework as well as the cooperation principles established in the TCA.

a. It requires modest changes to Annex 29 of the TCA, which is within the remit of the Specialized Committee for Energy.

b. Capacity allocation and access arrangements on the individual GB market interconnectors will continue to be regulated by the relevant regulators: Ofgem and the bordering country NRAs. This avoids the need for a new regulatory framework..

c. GB market pares will be responsible for any GB market arrangements required to support this model – e.g., GB market virtual hub, Power exchanges appointment/regulation, cost recovery/sharing.

d. The SDAC technical arrangements need to be configured and tested for GB market interconnectors (but they used to support GB prior to Brexit).

e. Future developments/changes to the service to GB market can be made by mutual consent (with the status quo operating model continuing to apply if no mutual agreement is found), while SDAC governance remains entirely applicable to manage EU SDAC in line with EU regulation.

Serviced Price Coupling (SPC): general principles (2/2)

Service conditions

The operational integrity of both GB market and SDAC can be protected. SDAC parties are able to commit to the ongoing provision of the service if it is on the basis of service conditions that are feasible (and accepted by all parties) - e.g., the maximum number/type of complex orders; number of GB market bidding zones (price points); and the supported market time units

Extension to Intraday

Once successfully rolled out for SDAC, the service can be extended to other timeframes, such as intraday using a similar service framework provided by SIDC and in a later stage coupling the balancing markets

Next steps on SPC

Keep the UK-EU price coupling topic high in the agenda with the coalition of signatories.

- Target EU Commission and National Governments.
- Key milestones:
  - Starmer – Von der Leyen summit in January
  - TCA revision in 2026

Further elaborate governance and technical aspects of SPC

- Interaction of SPC with SDAC (and SDIC) and target offshore market (OBZ, AHC, FB…), gaming opportunities
- Definition of roles and responsibilities, EU and SDAC regulations in SPC

IDCC_C: status update

European Markets

Bernard Malfliet

IDCC (c) external parallel run start

Background

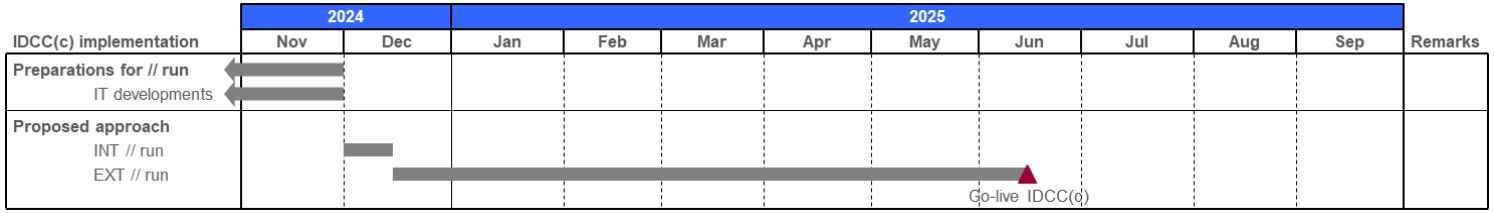
- After the successful Go-Live of IDCC(a) - ID XB capacity provision at D-1 14:45, and IDCC(b) - Update of ID XB capacity provision at D-1 21:45, Core TSOs are now working on the implementation of IDCC(c) and aim for a go-live in **June 2025.**
- Core IDCC(c) process would recompute ID XB capacities, based on ID congestion forecasts (grid models) for the last 18 hours of the day, providing updated capacities to the SIDC XBID platform at **D 4:30.**

Added value of IDCC(c)

- In today's operational IDCC(b) process, often ID XB capacity are constrained due to remaining congestions (i.e. N-1 violations) in the used grid models. This is because the Day-Ahead security analysis process, in which cross border relevant congestions are coordinated between TSOs is still ongoing.
- It is the expectation that recomputing the Core IDCC process using more mature ID congestion forecasts will lead to more accurate and better ID capacities. **First preliminary results of the Internal // run support this claim.**

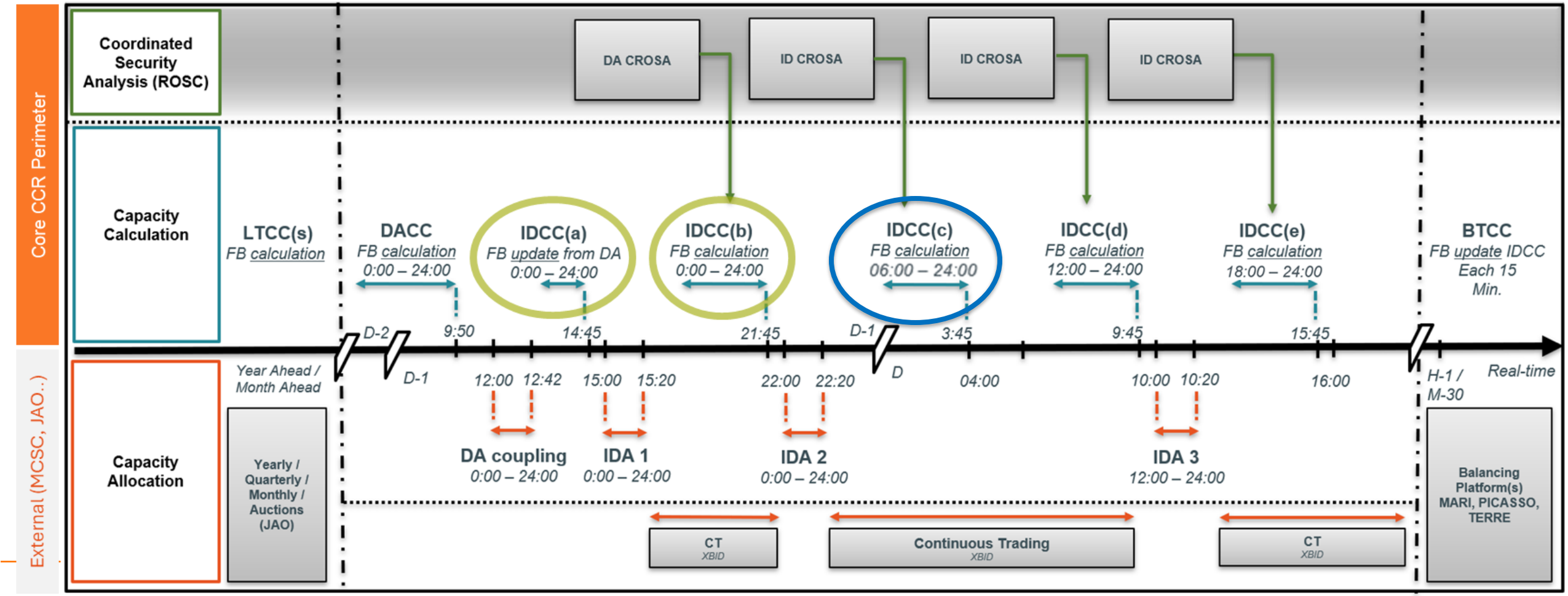
Core TSOs have approved to start the IDCC(c) EXT // run on on date 17/12 for BD 20241217

- Publication will be done during the entire external // run, with a disclaimer that initially some BDs may not be representatives due to TSOs learning from the process. **Publication will be done via the known JAO publication tool for Core IDCC // runs.**



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.



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

Core IDCC(c) Go-Live prerequisite – 4th ID CCM amendment

Notification

- A public consultation will be started soon (tentative date mid-December until mid-January) to introduce a small but important update to the Intraday Capacity Calculation Methodology. After discussion with regulators, it has been agreed to move the delivery deadline for the capacity to the continuous trading platform to **D 04:30.**
- The reason for is to be able to consider significant updates on remedial actions in the IDCF which is only available around 02:40. Given that the intraday calculation process takes about 1h40' this would take us to a "happy flow" delivery time of 04:20 at the earliest, so it was concluded to put the deadline at 04:30.
- **Core TSOs, including Elia included strongly suggest to accept this change as this is expected to lead to improved capacity results on the short term, via a Go-live of IDCC(c) in summer 2025.**

System Services Design

GUFlex: Highlights from the workshops

System Services Design

Antoine Weynants

GUFlex workshops

3 GUFlex workshops took place since last WG Grid (04/10/2024)

- 10/10/2024 : **Feedback of public consultation** on design note and **Code of Conduct proposal**
- 15/11/2024 : **Updates** of proposed **design**, **additional evolutions** foreseen and next steps and **Target Model**
- 11/12/2024 : **Reporting** of flexibility **activations**, last **design updates** and **refined planning for 2025**

10/10/2024 Workshop

10/10/2024 Workshop : summary

During this workshop, Elia provided an **overview of the updated design** (following the public consultation of the design note) – in line with the Code of Conduct submitted to the CREG - and some **information regarding the implementation**

Updated design

- Elia gave an **overview of the design adaptations**, such as
  - Some adaptations in the **Grid Study Methodology**
  - Clarifications of the **operational processes**
  - Clarifications regarding the definition of the **temporary period**
  - **Impact on the BRP** : proposal to change the R&R
- Elia justified why some design elements were unchanged, such as:
  - **Annual cap carrying unused flexibility** over subsequent years
  - **Impact on the BSP**

Implementation

- Elia explained that **different go-lives** will take place, such as:
  - Application of updated methodology for client connection-studies
  - Updated capacity reservation processes
- The final go-live – related to the Guarantees and operation principles requires the **amendment of several regulated document**, and implementation could be on the critical path
- Elia intents to **amend the Coordination Rules**, the **Connection Contract** and the **T&C BRP/BSP** and in **2025**

15/11/2024 Workshop

15/11/2024 Workshop : summary

During this workshop, Elia presented

- Some **updates on the design** presented during previous workshops
- **Additional evolutions** foreseen as **next steps**
- The **Target Model** and the **related enablers**
- The **roadmap** related to flexible access

Updated design

Elia presented the following elements :

- Updated process for the **revaluation of flexibility needs**
- **Technical report for EOS/EDS** proposing a flexible access : Elia explained that a justification note will be shared
- Next steps for the **Grid Connection study methodology**

Additional foreseen evolutions

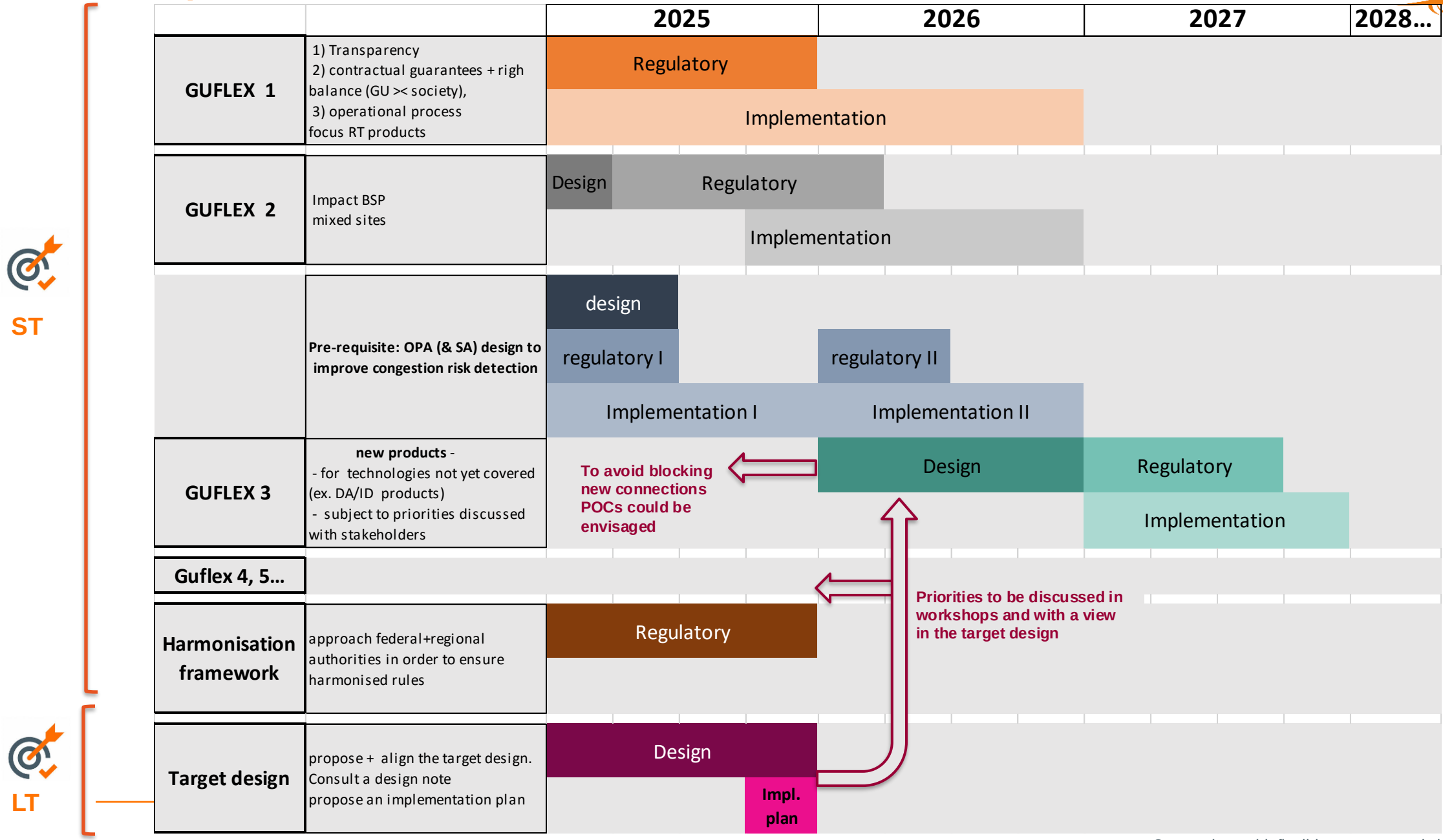
Elia presented the following elements :

- The status on the **impact on the BSP and CRM**, those elements will be further investigated in Q4 2024 and Q1 2025
- Status on the **management of mixed sites**, this element will be further investigated in Q4 2024 and Q1 2025

15/11/2024 Workshop : Target Model

- Elia presented the **Target Model**, with a **TOTEX optimization** in the context of **long-term Grid Planning** and an **optimization of activations in operations**
- Elia explains the different **enablers**
  - **A cost-allocation** to enable an **optimization of activations** while **allocating the costs** to the Grid Users **with flexible access**
  - The definition of a **set of congestion management products** that meets the needs of the different Grid Users type
  - An **appropriate remuneration scheme** that would compensate the loss of opportunity linked to more frequent flexibility activations while preventing the risk of market distortion
  - **Methodological developments** required in the context of long-term grid planning

Roadmap towards ST and LT



11/12/2024 Workshop

11/12/2024 Workshop : summary

During this workshop, Elia presented

- The **reporting of flexibility activations** – as foreseen in the balancing incentive on flexible access
- The **conclusions** regarding the **technical reports** in the context of **EOS/EDS** proposing a flexible access
- A **status** of **all possible mitigation measures** related to the impact on the BSP
- The **roadmap** and a **refined planning for 2025**

MVAr: Highlights from the workshop of 10/12

System Services Design

Carsten Bakker

Incentive 2023

In 2023, an incentive study was performed to identify design improvements, realize a European benchmark and investigate options to facilitate the participation of non-mandatory units.

The improvements identified in this incentive are planned to be implemented in the coming two years (2025 -2026).

The workshop was organized as starting point for the implementation to remind the market of the content of the incentive, add some additional insights/changes and show an initial preliminary planning.

Introduction

Incentive of 2023

Context and goals of the incentive

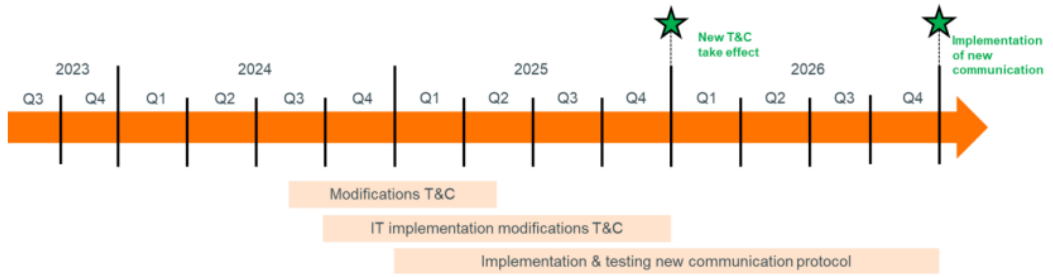
- Following entry into force of the new design in 2020, some **return of experience** is available
- This study intends to analyze **further possible design improvements** for the voltage and reactive power control service in order to:
  - Optimize the efficiency of the service and the remuneration
  - Increase participation to the service

Content of the study

- Identification of **design improvements** together with market parties and the CREG and proposal of solutions
  - Based on **return of experience** from the current design
  - Including at least a review of the modalities for the penalties
- Realization of a **EU benchmark** concerning the components (fixed or variable) for an **ideal remuneration** of the service
- Specific analysis of the potential improvements that **might facilitate the participation of non mandatory units** (such as demand response) to the service
  - Identification of **evolutions of the market design** to facilitate the participation of non-mandatory units
  - Adequate procurement mechanism for the participation of non-mandatory units
  - Other aspects: type of service allowed/recommended (automatic, manual or other), simplified prequalification/communication process/tools for non mandatory units…

➔ This analysis will consider a **ratio between the potential** that represent these units for the voltage and reactive power regulation as well as their added value for the service **compared to the additional costs and complexity**

MVAr incentive | 6



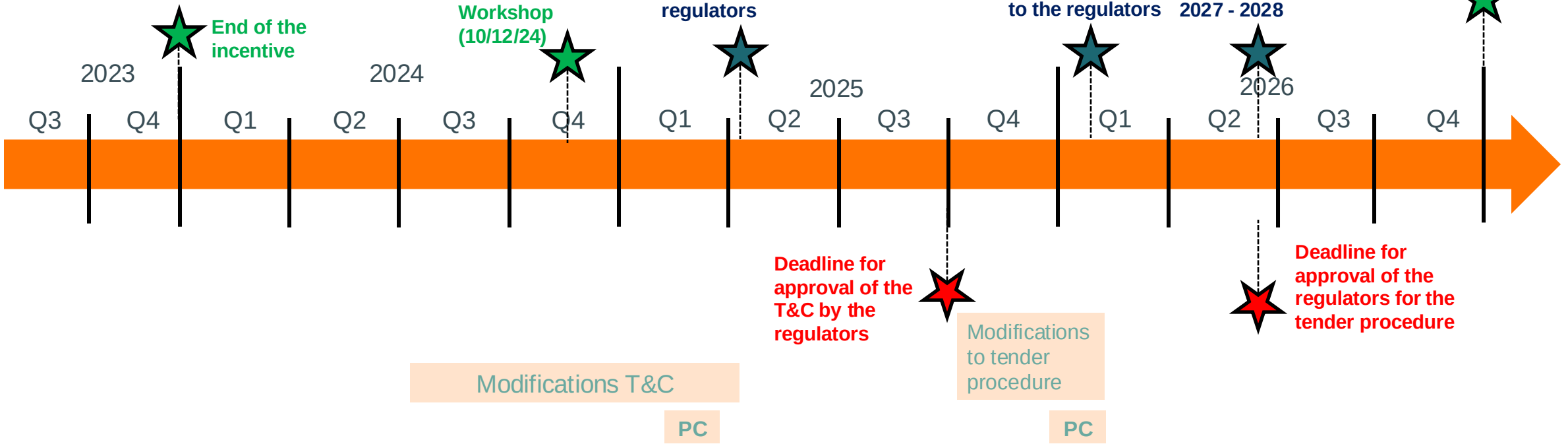
Agenda of the workshop

1. Introduction
2. Context for the project
3. MVAr market design evolutions
4. Planning for design evolutions
5. IT Implementation
6. Planning for IT implementation

1. **Continuous** activation control for manual and automatic activation
2. **Penalties** need to be in line with the continuous activation control.
3. **Communication** with Elia
4. **Price setting** during the tendering process *(already implemented)*
5. Update the Terms and conditions of the MVAr service to be **more technology-neutral**
6. Simplification of the participation for non-mandatory units
7. Implementation of message to start-up assets and adding a flag
8. Adding an **additional bandwidth** to compensator mode

Timeline for next years

Preliminary timeline, still subject to change



iCAROS: Highlights from the OPA design workshops

System Services Design

Viviane Illegems

iCAROS phase 2
Status of discussions & planning – Focus OPA

iCAROS Phase 2 will be split in several releases – first focus OPA & CRI

- **Next releases of iCAROS phase 2**
  - **RELEASE 1 (OPA): Full design availability plan for ≥ 25 MW production units all timeframes and adding new features - Minimum Viable Product [target go-live end Q2 2025]**
  - *RELEASE 2 (Coordination Rules): Extension of CRI to local (< 150 kV up to 36/30 kV) [and DSO] grid [target go-live end Q4 2025]*
  - **RELEASE 3 (OPA°: Full design availability plan for ≥ 25 MW production units all timeframes and adding new features (including status reservation, exchange of testing information, …) + Enduring solution for the split of roles OPA and BRP + Extension of Design availability plan for <25 MW and ≥ 1 MW production units + demand facilities [target go-live end S1 2026]**
  - **RELEASE 4 …**

iCAROS phase 2 – Release 1 - Key feedbacks from market parties (Task force iCAROS 21/10/2024 + Digital Q&A Taskforce iCAROS 20/11/2024)

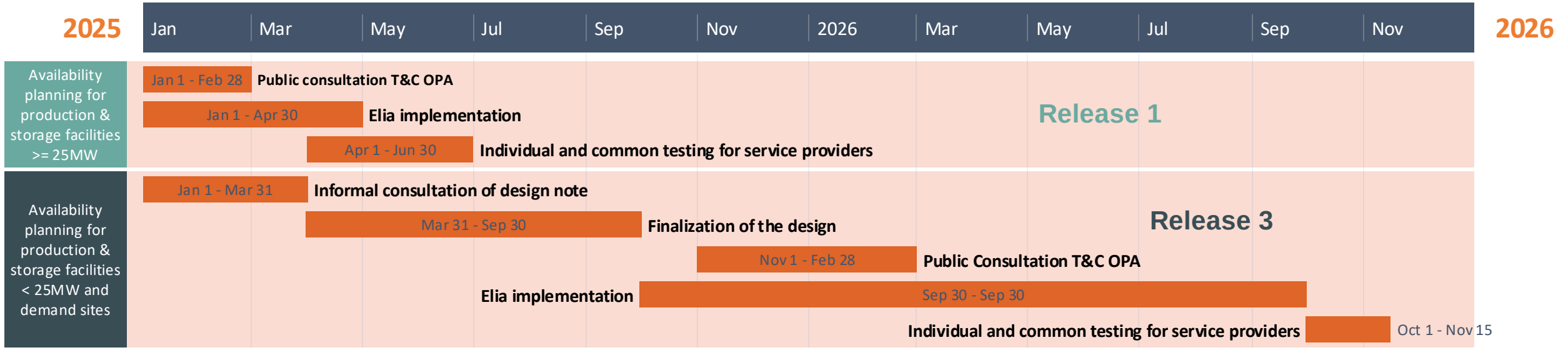
1. **Validation of availability planning change requests**
   - A fast validation is important for market parties, especially for late change requests
   - But Elia still needs sufficient time to evaluate the impact of a change
   - Elia's proposals towards market parties:
     - No rejection in case of prolongation of a planned outage. Acceptance with associated costs remains possible
     - Provision of the problematic days for Elia in case of refusal of an availability plan update in order to ease the elaboration of an alternative plan
2. **Merging data flows for outage planning and transparency**
   - Market parties support the idea
   - Request of clear rules on what should be done to be compliant with transparency regulations (including links with the possibility for Elia to reject an availability plan)
3. **Planning for next steps**
   - Planning was deemed feasible by market parties by subject to stability of the requested implementations and timely delivery of technical guide (target date end of the year). Late modifications due to regulatory decision impacting the technical guide will result in a delay of the go-live

iCAROS phase 2 – Release 3 - Key feedbacks from market parties (Task force iCAROS 21/10/2024)

1. **Timings are considered as extremely ambitious for the small technical facilities** given the actors operating these facilities are typically not active in the electricity market. It will be very challenging to reach them and to activate them.
2. In order to have a successful implementation of the OPA design especially with the extension towards small units it is not only important to have a **common TSO-DSO design for those units but also a common regulatory framework by all 4 Belgian regulators**.

iCAROS phase 2 – OPA evolutions - Status of discussions & planning

- Elia proposes to split the evolution of the availability planning process in two steps:
  1. **Release 1 :** The evolution related to the availability planning for production & storage facilities larger than 25 MW
  2. **Release 3 :** The evolution related to the new availability planning for production & storage facilities between 1 and 25MW and demand sites



iCAROS phase 1 Return of Experience (REX)

iCAROS phase 1 REX – 11/12/2024 – Agenda workshop

1. Feedback provided by market parties regarding the operational support during the implementation phase, go-live and after go-live
2. Feedback provided by market parties in the survey/bilateral meetings:
   - On design
   - On implementation (including operational feedback from Elia)
3. (anonymized) results of consistency controls
4. Next steps

Upcoming stakeholders interactions

Coming stakeholder management interactions in the framework of step 1 of iCAROS phase 2

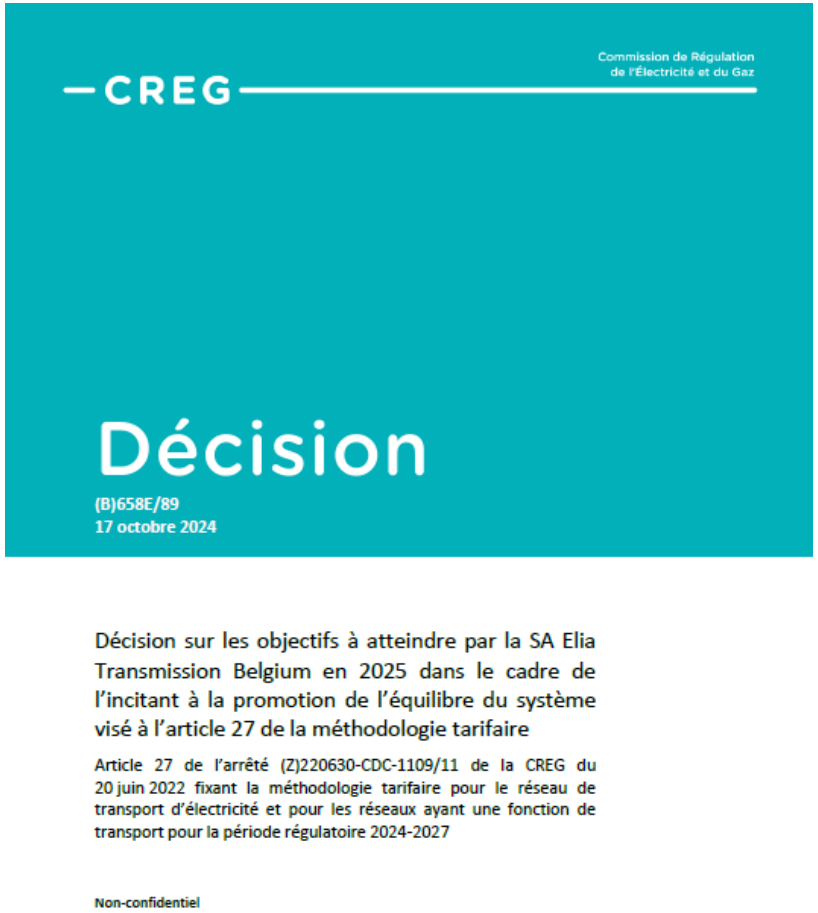
- Next interactions
  - **Janvier 2025 launch of public consultation** regarding T&C OPA for Availability Planning extension for large units [release 1]
  - **Q1 2025 Launch of informal consultation** design for small units /Demand facilities [release 3]
  - **Q1 2025: taskforce iCAROS** – presentation design extension of CRI to local (< 150 kV up to 36/30 kV) - no development needed from market parties

CREG incentive on Future System Restoration

System Services Design

Harold Guisset

Context of the future grid restoration study


CREG

Commission de Régulation de l'Électricité et du Gaz

Décision

(B)658E/89
17 octobre 2024

Décision sur les objectifs à atteindre par la SA Elia Transmission Belgium en 2025 dans le cadre de l'incitant à la promotion de l'équilibre du système visé à l'article 27 de la méthodologie tarifaire

Article 27 de l'arrêté (Z)220630-CDC-1109/11 de la CREG du 20 juin 2022 fixant la méthodologie tarifaire pour le réseau de transport d'électricité et pour les réseaux ayant une fonction de transport pour la période régulatoire 2024-2027

Non-confidentiel

Study part of the Incentive on System Stability.

Decision approved on 17/10/2024 following a public consultation of 6 weeks.

Study to be delivered in 2025.

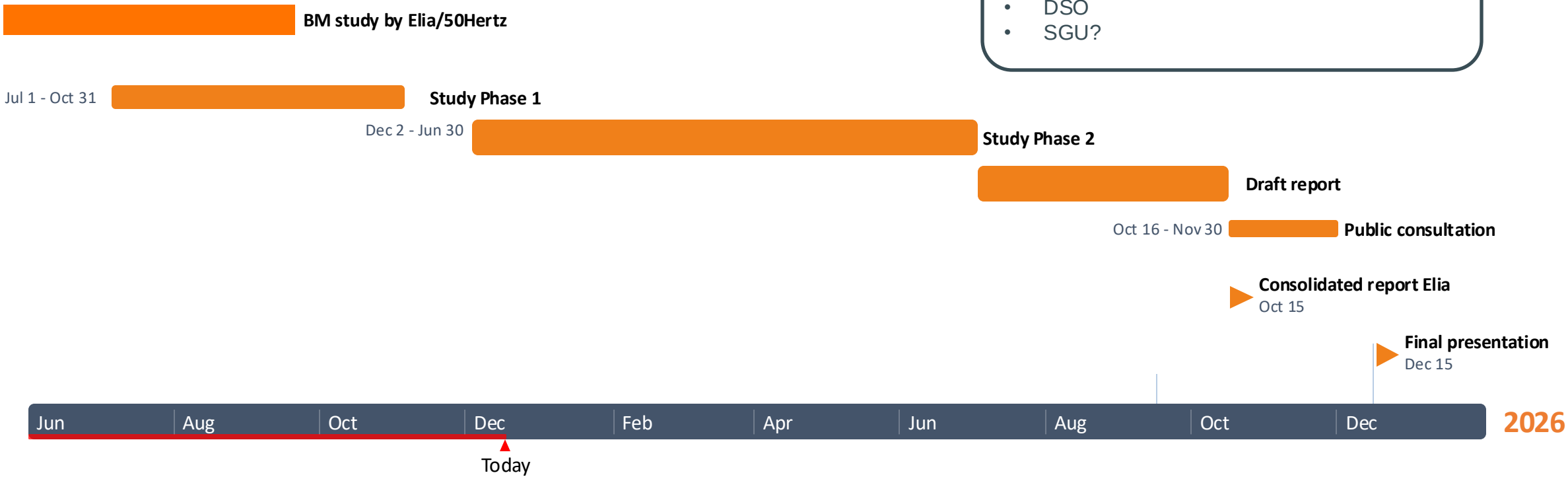
Scope of the future grid restoration study

The aim of this incentive is to explore the feasibility of an efficient and reliable grid restoration in a future electricity system with a high share of renewables, a system towards which the grid could evolve over the next 30 years.
Specifically, the CREG has asked Elia to include the following topics in the study:

- **Technical capacities of existing and future technologies** (wind, photovoltaic, storage, SMR, etc.), with realistic potential for deployment on electricity markets, to be used for system restoration on the basis of binding TSO instructions concerning specific setpoints.
- What are the **possibilities and limits** of these types of technology, based on individual or group installations?
- What **incentives** are needed to install a reliable blackstarter (diesel generator, batteries, turbojet, etc.) to start up auxiliary systems?
- What **changes are needed to the restoration plan** to meet the current restoration target in an electricity system with a significant share of renewable energy sources?
- Is a minimum volume of **dispatchable resources** (possibly with CO2 emissions) necessary to achieve the current restoration target?
- How can **new technologies** such as synchronous capacitors help in rebuilding the grid?
- Are **new rules** needed to ensure that the system can be restored efficiently?
- What recommendations does the above analysis allow us to make in terms of the necessary **technical requirements for power generation units and energy storage facilities** (whether or not as a condition of connection or access to the grid)?
- What recommendations does the above analysis allow us to make in terms of system restoration, such as the **geographical distribution** of energy sources with black-start and islanding capabilities and the **design of restoration services.**

Timeline future grid restoration study

Active collaboration and inputs from various stakeholders throughout the study:
- Academic institutions
- DSO
- SGU?



Operations

Winter Outlook 2024-25

Operations

Silvio Ferreira

Content

1. Summary view Entso-E Winter outlook

2. View on Elia situation for the upcoming winter

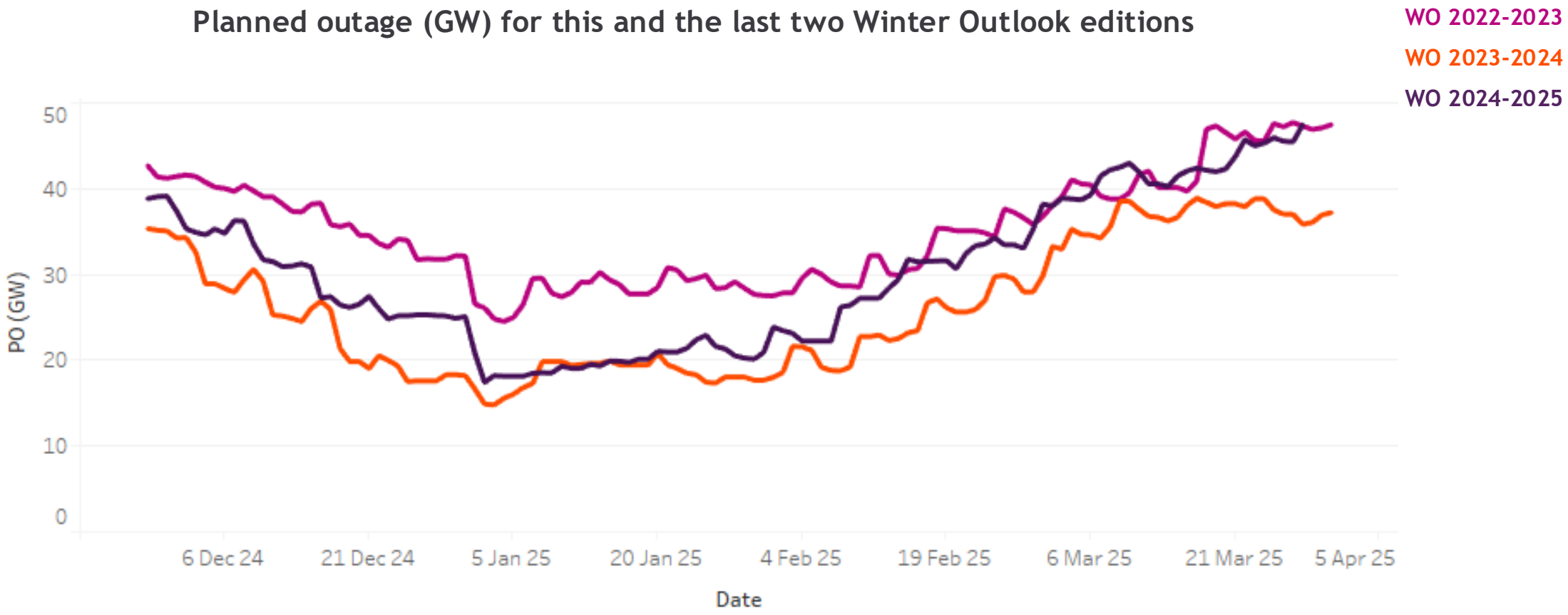
Assumption trends - overview

The overall adequacy level is expected to be robust.

- High gas storage
- Overall favourable hydro storage levels
- Good availability of thermal plants
- Stable expected demand compared to last year

Trends compared to past Winter Outlook (I)

Planned outage (GW) for this and the last two Winter Outlook editions



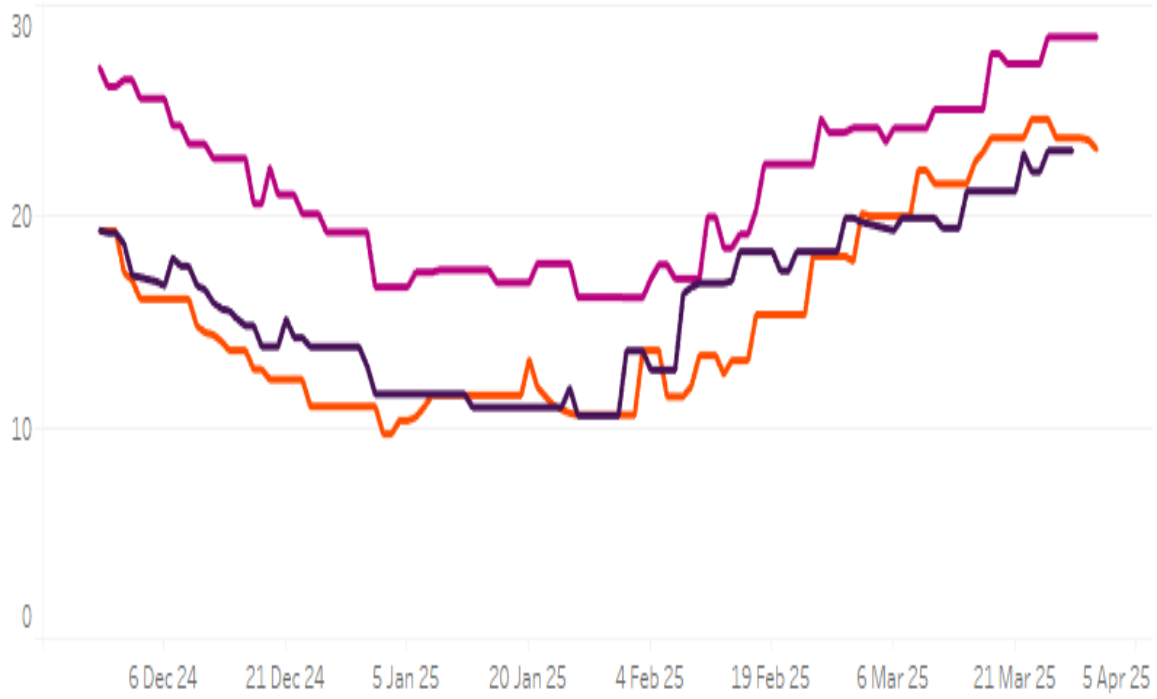
Planned outages are slightly higher than last year (Winter 2023) but lower than Winter 2022.

Trends compared to past Winter Outlook (II)

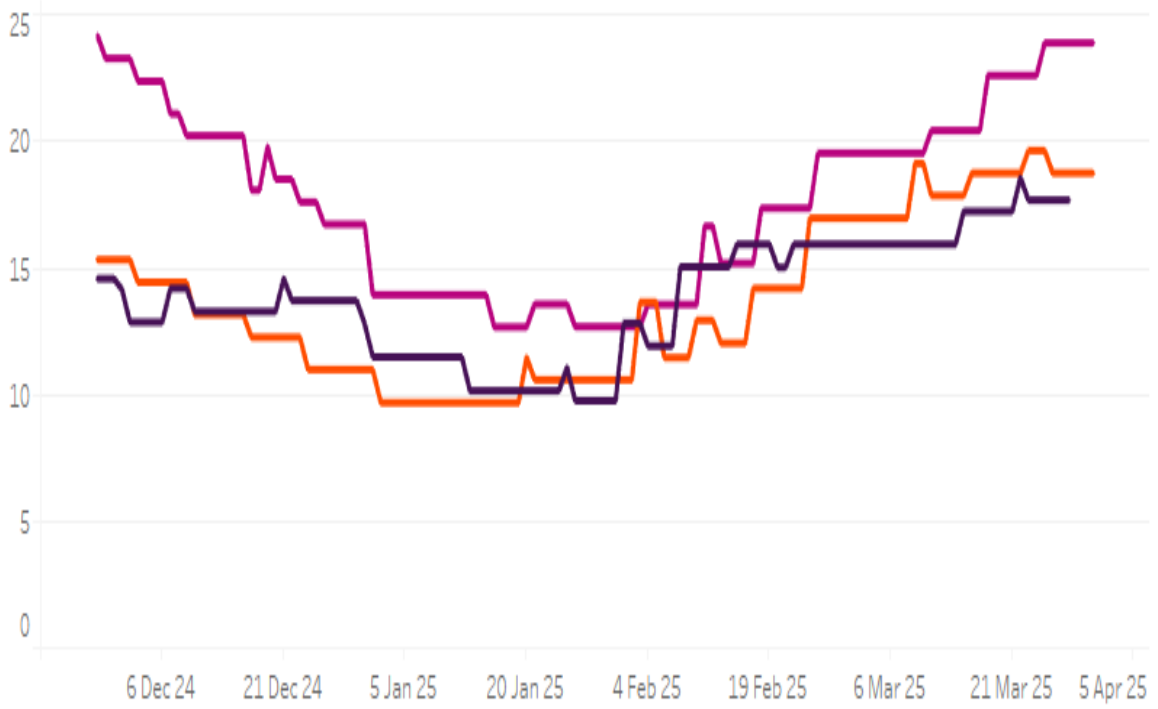
Planned outage (GW) for Nuclear in this and the last two Winter Outlook editions (based on TSO data/projections)

WO 2022-2023
WO 2023-2024
WO 2024-2025

Europe



France



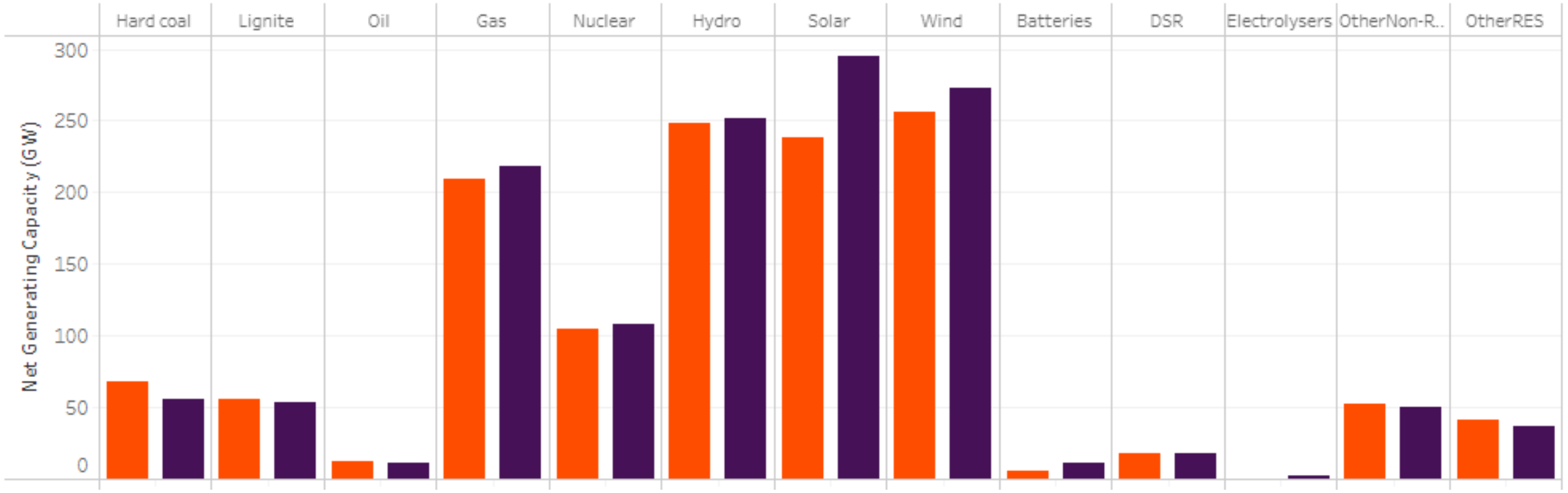
Availability of nuclear is expected to be favorable.

Trends compared to past Winter Outlook (III)

WO 2023-2024

WO 2024-2025

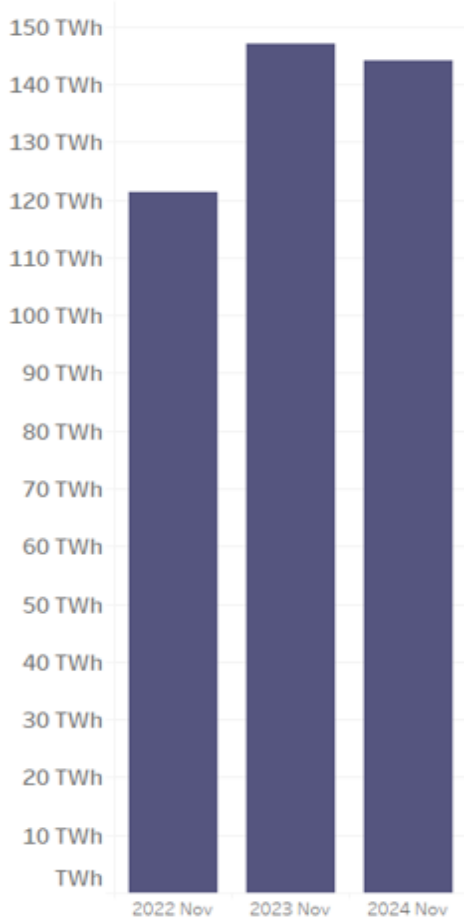
Net generation capacities for this and last Winter Outlook



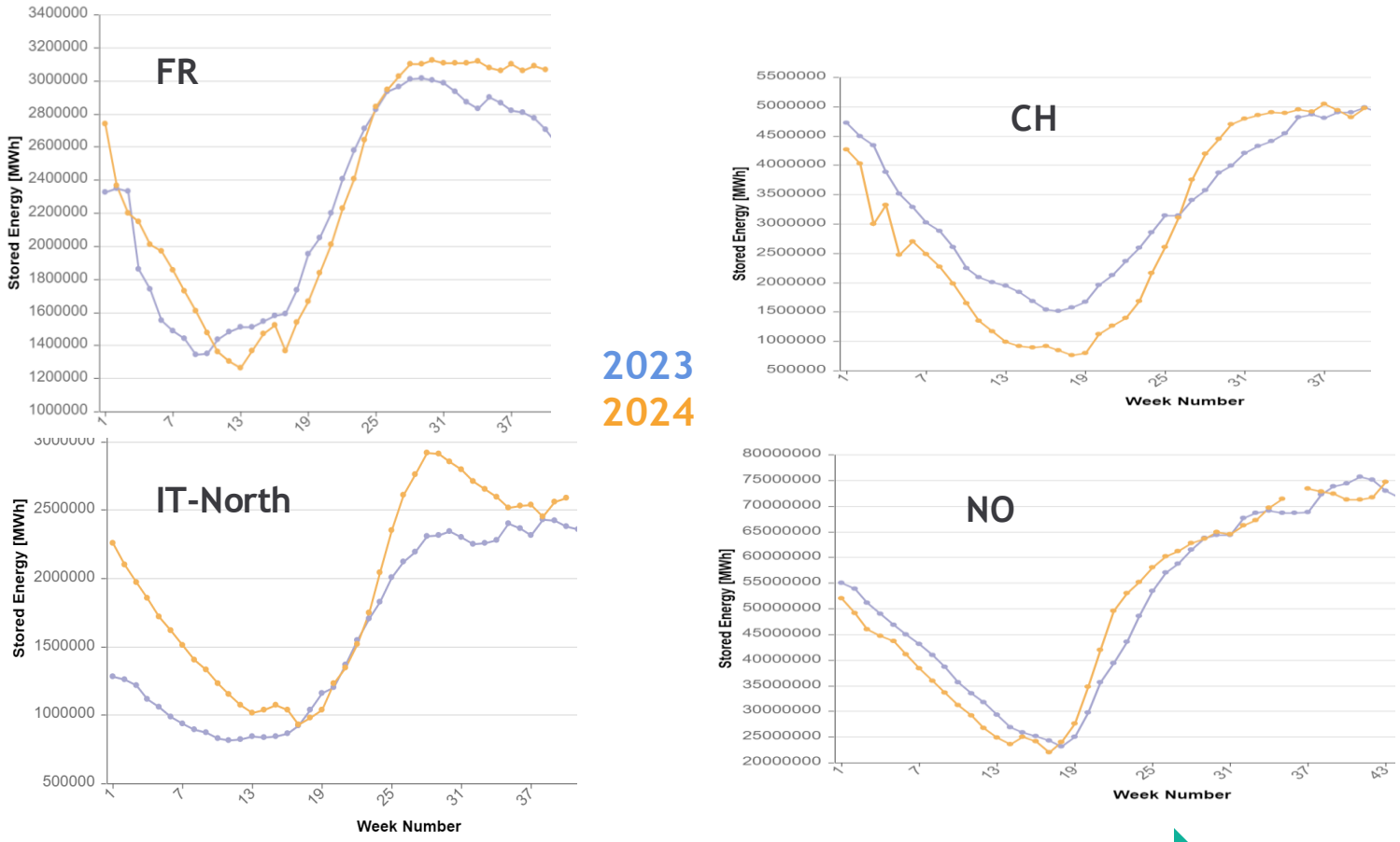
Thermal net generation capacities remain stable, less hard coal but more gas generation, whereas RES net generation capacities are steadily increasing.

Trends compared to past Winter Outlook (IV)

Hydro storages in the winter outlook model



Transparency Platform comparison (extracts)



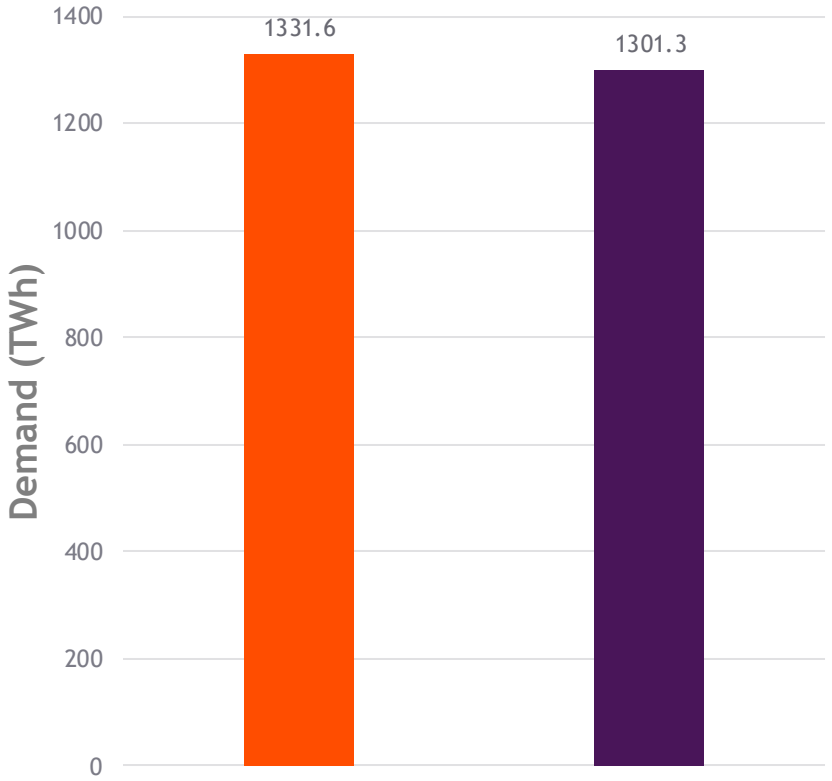
Overall, current hydro storage levels are comparable to 2023 and significantly higher than in 2022.

Trends compared to past Winter Outlook (V)

WO 2023-2024

WO 2024-2025

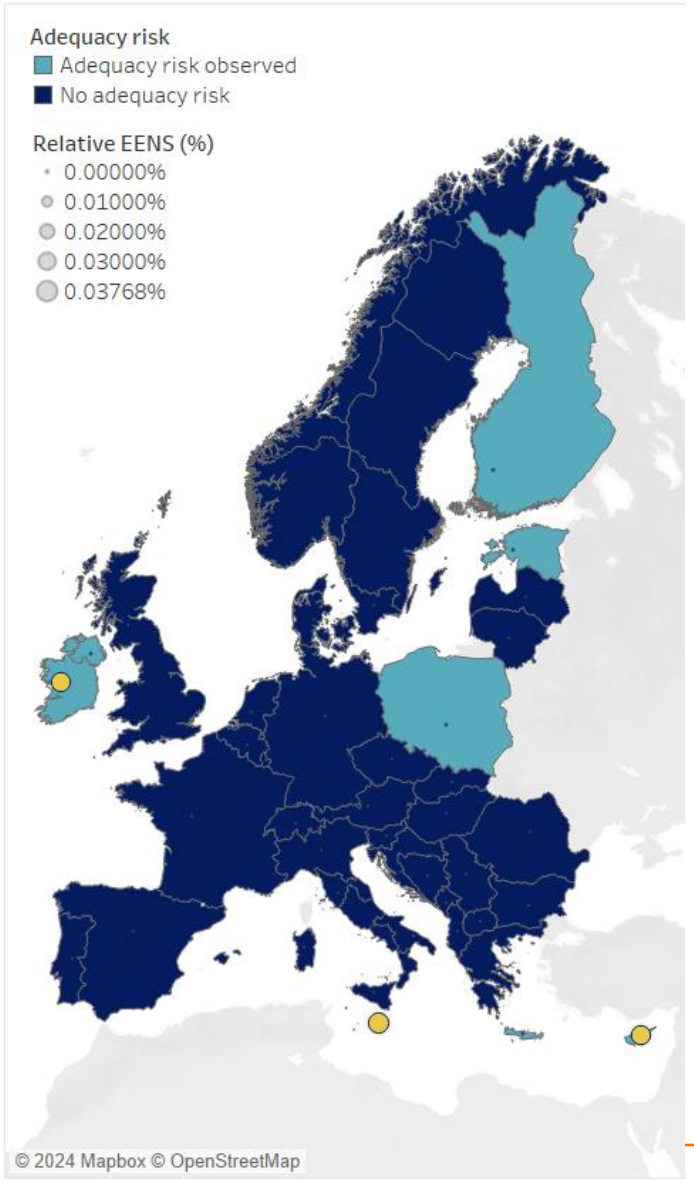
Demand (TWh) comparison this year and previous Winter Outlook



Overall demand as well as peak demand are comparable to last Winter

Slightly lower expected total demand compared to last year.

Results confirm positive trend identified in input data



CY00	EENS: 0.62198 GWh (0.03401% of Seasonal Consumption) 99th percentile ENS: 5.17897 GWh (0.28316% of Seasonal Consumption) LOLE: 8.82 h
EE00	EENS: 0.00037 GWh (0.00001% of Seasonal Consumption) 99th percentile ENS: 0.00000 GWh (0.00000% of Seasonal Consumption) LOLE: 0.01 h
FI00	EENS: 0.11843 GWh (0.00032% of Seasonal Consumption) 99th percentile ENS: 2.18168 GWh (0.00595% of Seasonal Consumption) LOLE: 0.26 h
GR03	EENS: 0.00549 GWh (0.00050% of Seasonal Consumption) 99th percentile ENS: 0.16741 GWh (0.01519% of Seasonal Consumption) LOLE: 0.21 h
IE00	EENS: 4.88980 GWh (0.03351% of Seasonal Consumption) 99th percentile ENS: 28.75230 GWh (0.19705% of Seasonal Consumption) LOLE: 19.82 h
MT00	EENS: 0.39248 GWh (0.03768% of Seasonal Consumption) 99th percentile ENS: 4.10617 GWh (0.39422% of Seasonal Consumption) LOLE: 12.82 h
PL00	EENS: 0.05751 GWh (0.00009% of Seasonal Consumption) 99th percentile ENS: 1.14027 GWh (0.00181% of Seasonal Consumption) LOLE: 0.09 h
UKNI	EENS: 0.00438 GWh (0.00014% of Seasonal Consumption) 99th percentile ENS: 0.00000 GWh (0.00000% of Seasonal Consumption) LOLE: 0.02 h

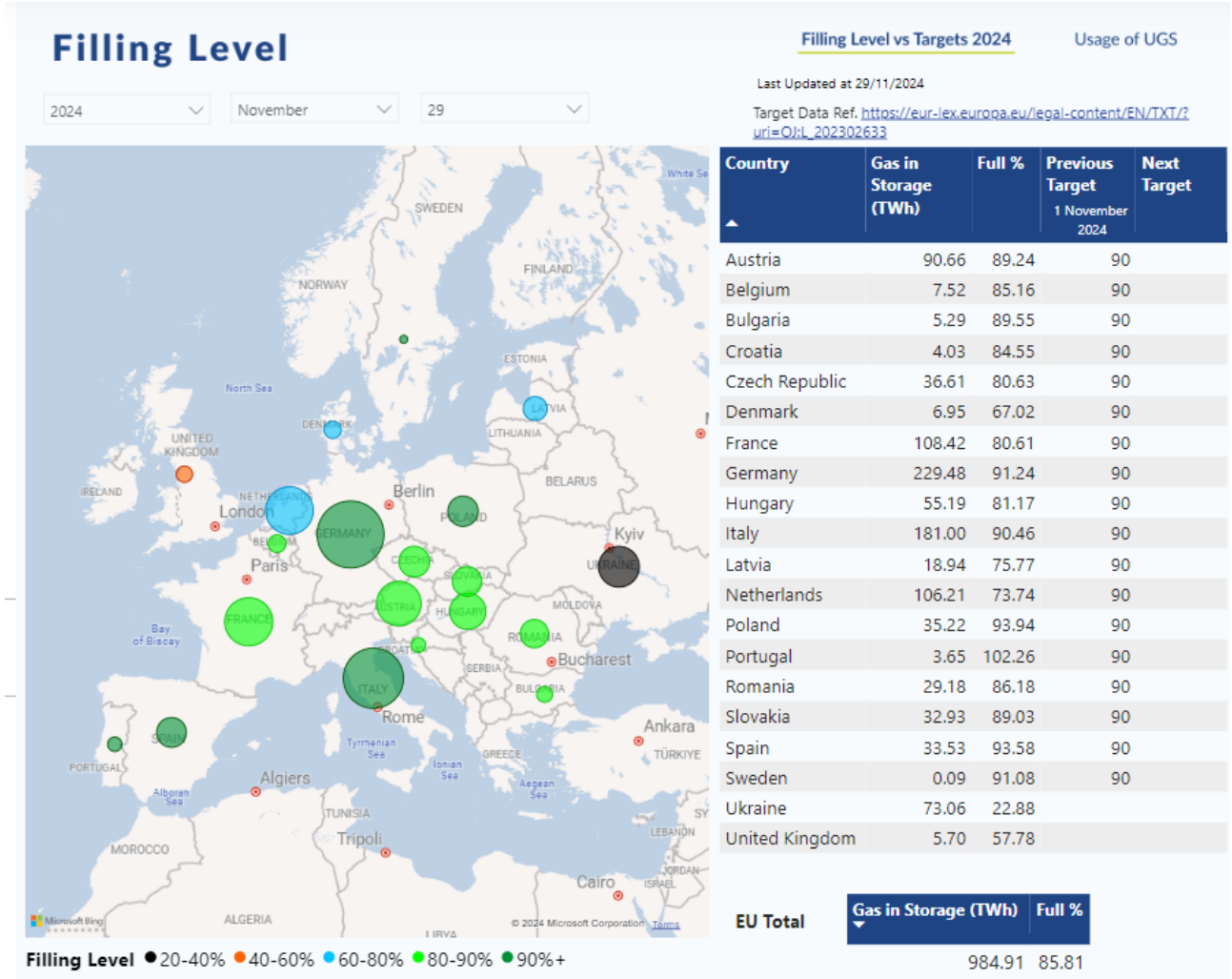
Adequacy risks:

- Mostly in remote areas
- FI, PL at risk if exceptionally adverse operational conditions
- Adequacy risks can be mitigated by non-market resources in FI, IE, MT.

Favourable adequacy results due to:

- RES expansion
- Favorable planned maintenance schedules
- Higher hydro reservoir level

EntsoE gas storage outlook



Country	Gas in Storage (TWh)	Full %	Previous Target 1 November 2024	Next Target
Austria	90.66	89.24	90	
Belgium	7.52	85.16	90	
Bulgaria	5.29	89.55	90	
Croatia	4.03	84.55	90	
Czech Republic	36.61	80.63	90	
Denmark	6.95	67.02	90	
France	108.42	80.61	90	
Germany	229.48	91.24	90	
Hungary	55.19	81.17	90	
Italy	181.00	90.46	90	
Latvia	18.94	75.77	90	
Netherlands	106.21	73.74	90	
Poland	35.22	93.94	90	
Portugal	3.65	102.26	90	
Romania	29.18	86.18	90	
Slovakia	32.93	89.03	90	
Spain	33.53	93.58	90	
Sweden	0.09	91.08	90	
Ukraine	73.06	22.88		
United Kingdom	5.70	57.78		

EU Total	Gas in Storage (TWh)	Full %
	984.91	85.81

While winter is already on-going, gas storage level in EU remains still high (~ 85%)

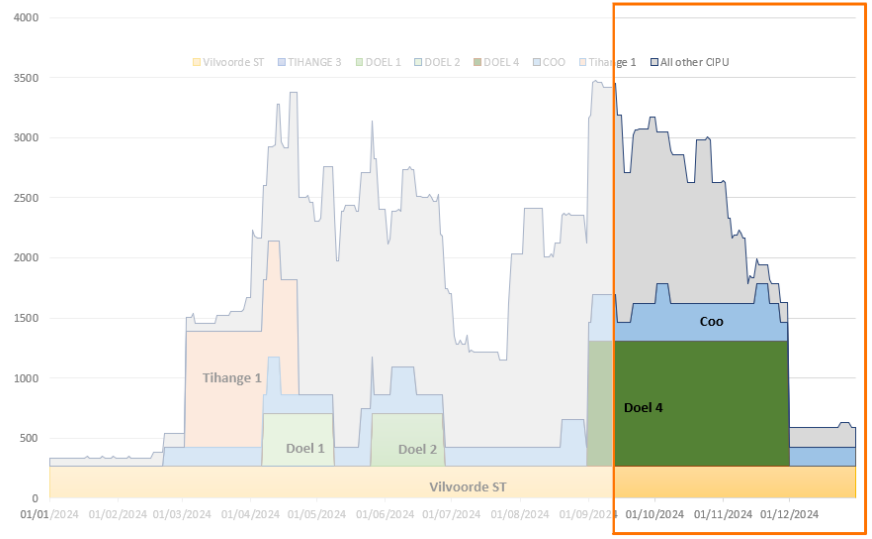
Winter Outlook : insights Elia

Elia

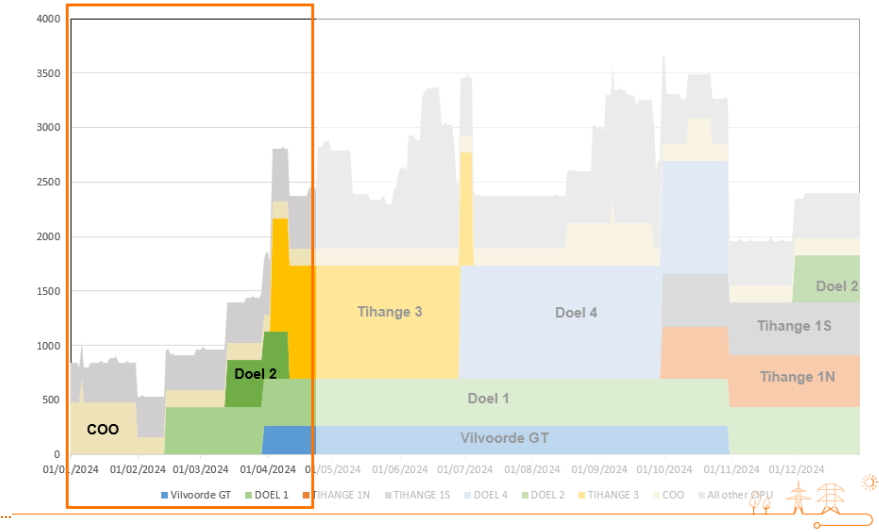
- Preliminary indicators
  - ✓ Limited revision volume on conventional power-units during critical months
  - ✓ Load expected to stay under / similar-to historical values for next winter

- Action being taken
  - ✓ Regular winter trainings
  - ✓ Alignment with control center representatives of neighboring countries
  - ✓ No other preventive winter actions yet foreseen in Belgium

Winter nov. - déc. 2024



Winter jan. - apr. 2025



Elia sees next winter with similar low risk level compared to previous winter, mainly due to limited revision volume in Belgium and good situation in neighboring countries. The identified trends of EntsoE outlook are confirming our local assessment.

AOB

- Next Grid WG on February 19 (13:00-16:00)

ANNEX