

Austrian Energy Day

JAO transmission rights: towards long-term flow-based allocation (and beyond)



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JAO transmission rights: towards long-term flow-based allocation (and beyond)

Long-Term Transmission Rights (LTTR): Status Quo

1 Why hedging now matters

LTTR: How does it work
today?

A bit of history

Long-Term Flow-Based Allocation (LT FBA): go live in November

2 What is it?

How does it work?

What to expect?

Forward Capacity Allocation 2.0 (FCA 2.0): what will come next?

3 New guideline

What to expect?

What are virtual hubs?

Status Quo

Why hedging now matters

For many years price and volatility levels were rather constant.
Since the energy crisis, much focus was given to the long-term markets due to:

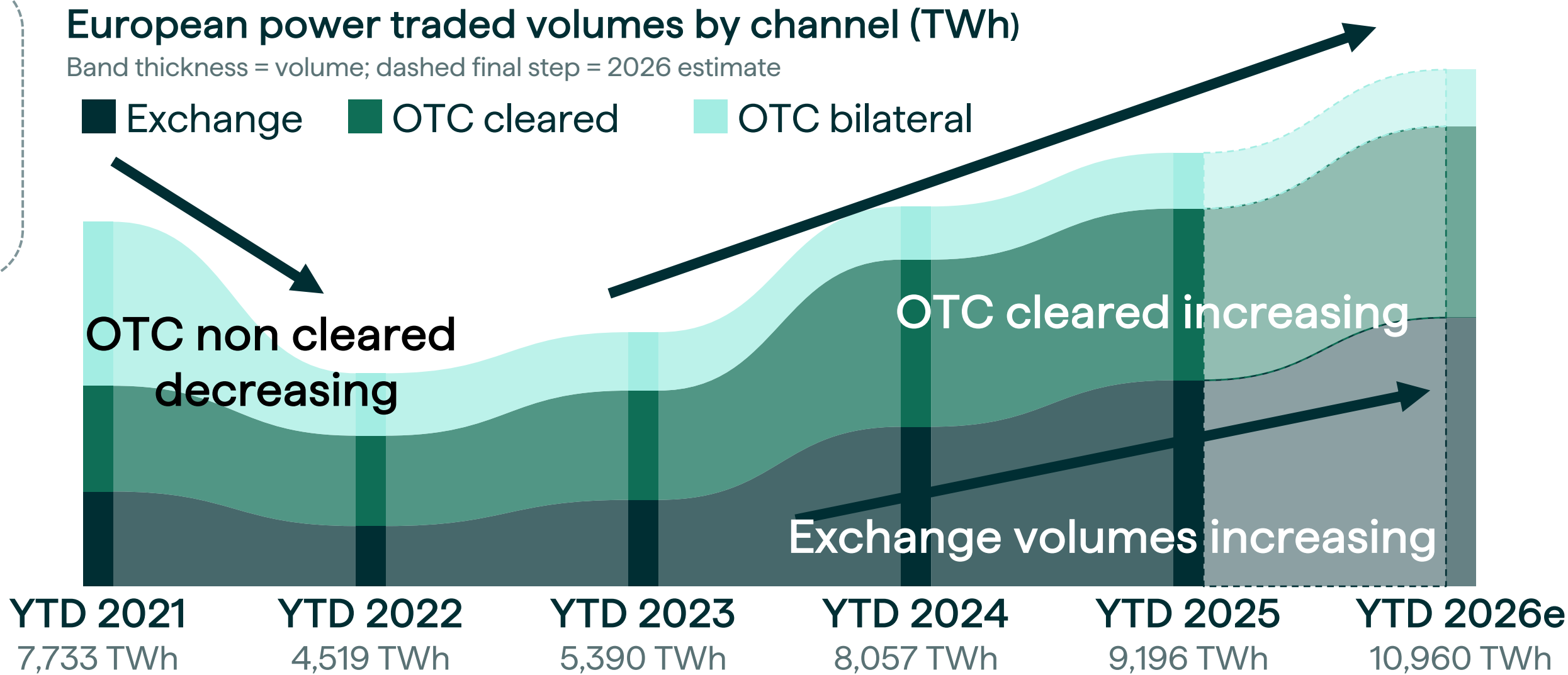
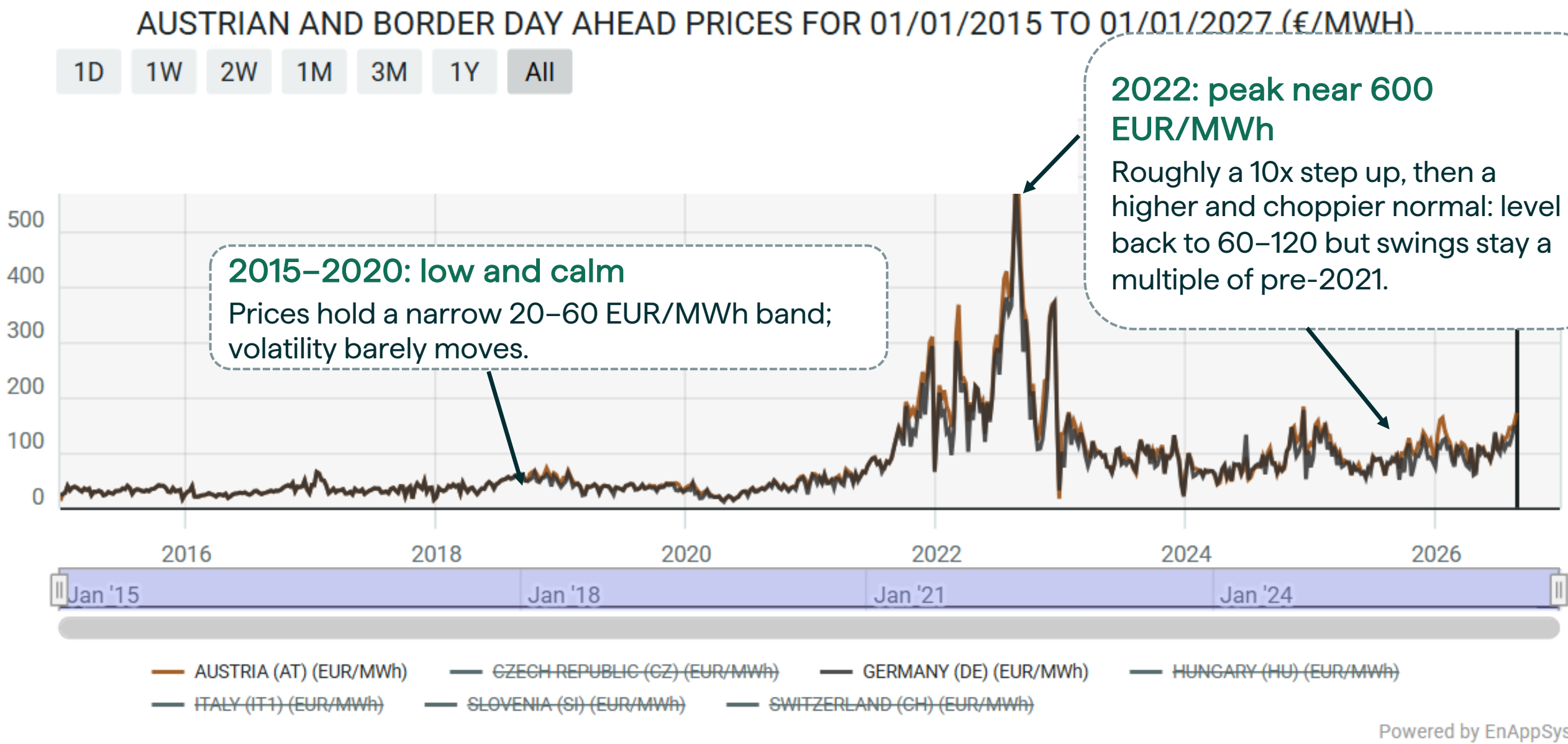
1

High volatility of market prices
-> multiple of pre 2021 levels

2

Liquidity drop in 2021-2022 mostly for non-cleared OTC markets*, recovery in 2023-2025 & swap non-cleared towards cleared

* due to higher collateral requirements, Span Risk of 30-40% of notional value in august 2022 vs.10-15% today



How to hedge with Long Term Transmission Rights in AT?

The hedging setup for AT: combination with LTTR

Main hedging instrument: zonal Futures
Main liquid market: DE



AT price exposure
Illiquid futures market

=

Germany future
Liquid, EEX Phelix

+

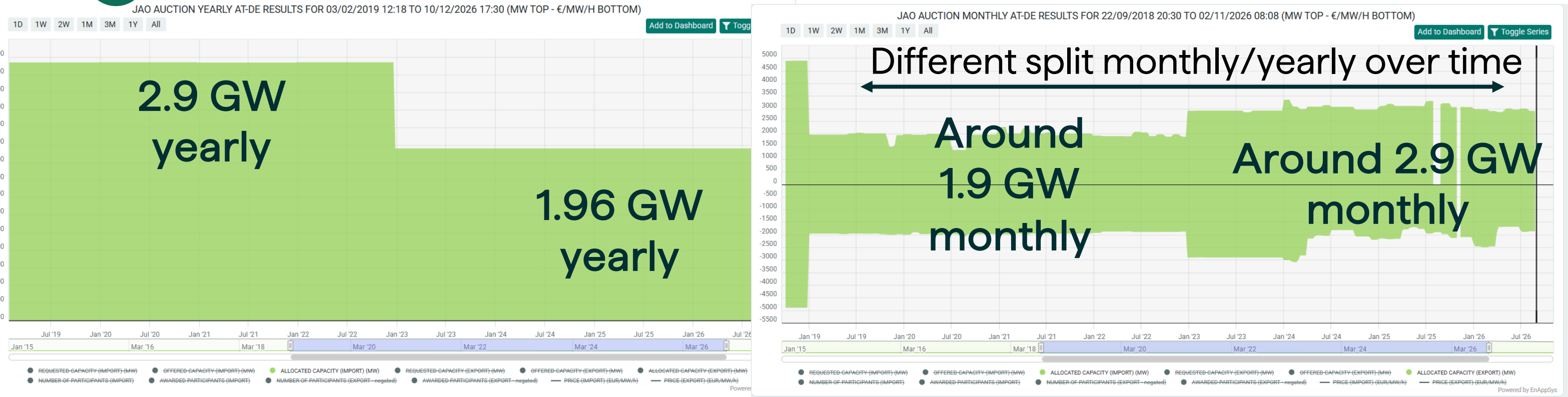
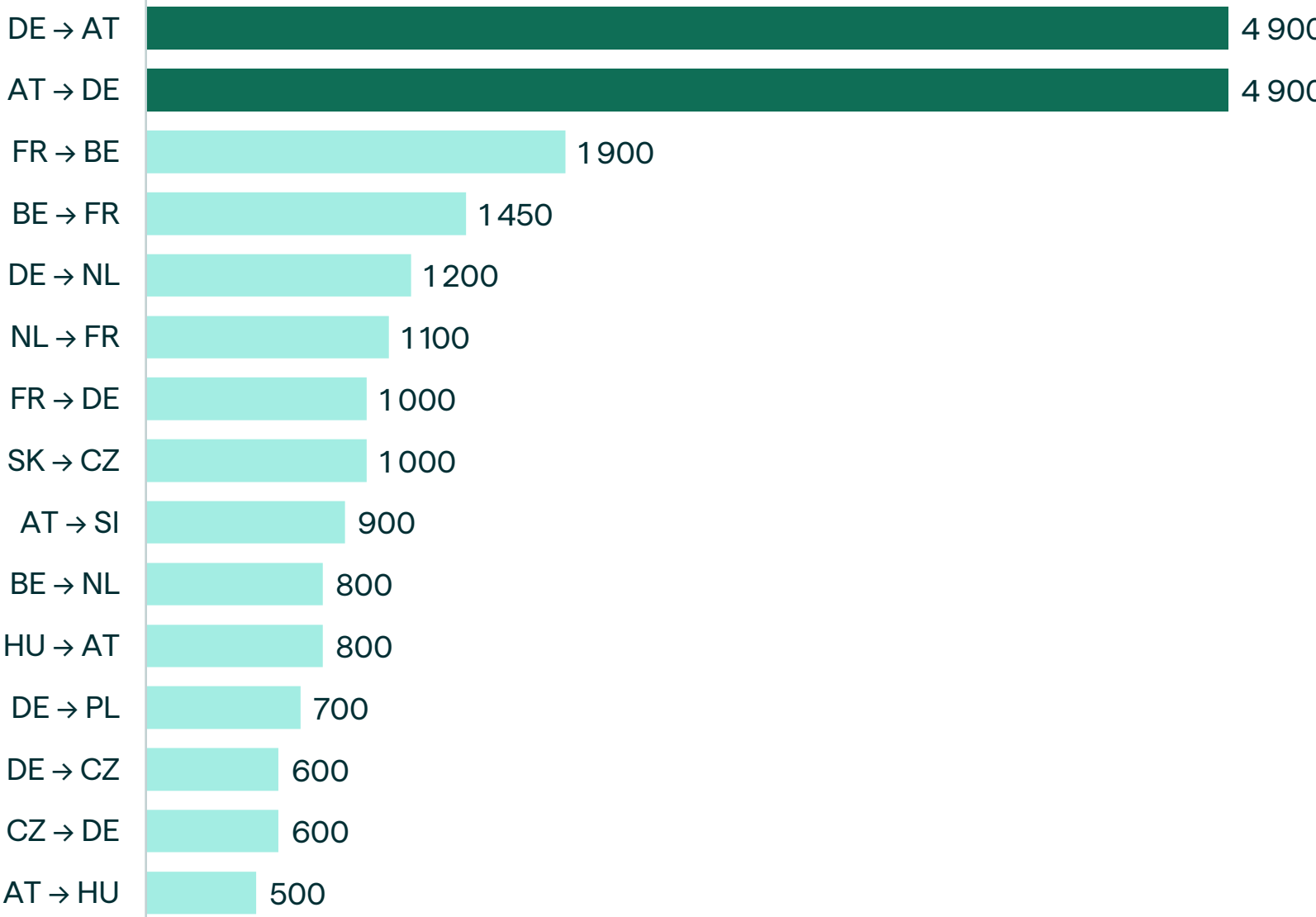
LTTR DE <> AT
FTR option, JAO auction

Combined position replicates the Austrian delivery price

The political deal due to the DE/AT bidding zone split in 2018
in exchange for Redispatch capacity reserves for DE

Σ Sum Monthly + yearly LTTR set at around 4.9 GW

DE-AT LTTR capacity is an exceptional outlier compared to other borders



4.9 GW LTTR capacity AT<>DE available since 2018, allowing to hedge positions in AT despite illiquid market

Long Term Flow-Based Allocation

Long Term Capacity Calculation & Allocation

1 Capacity Calculation output

One merged flow-based domain that stays within the historical ATC range by construction.

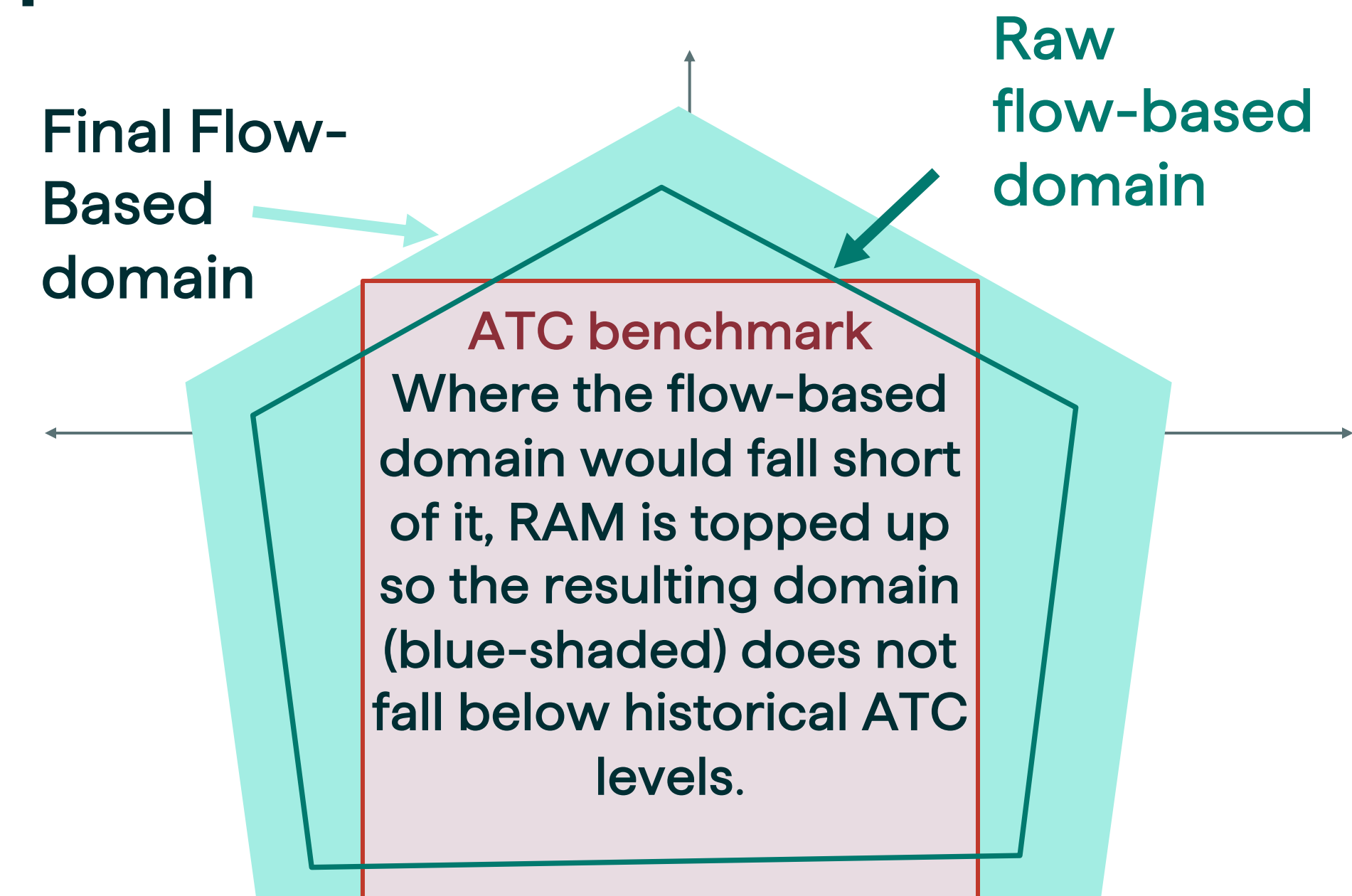
Final design: minATC raised to 100% of historical values, with maxATC set equal to minATC (MinATC = MaxATC) as a hard band, plus a cap to limit unwanted financial exposure for TSOs

1. Special treatments: DE-AT benchmarked at 50% of historical offered capacity
2. HR-SI fixed at 500 MW yearly / 150 MW monthly;
3. Polish borders kept at 0 (no historical offered long-term capacity).



2 Allocation Algorithm

Moves from border-by-border explicit auctions to one simultaneous, welfare-maximizing clearing across all Core borders at once — respecting the flow-based domain (PTDF/RAM constraints) rather than independent bilateral limits.



objective function

$$\max_b \sum_{i \in b} Price_i \cdot q_i$$

Maximize total accepted bid value, subject to the flow-based network constraints (PTDF × quantity ≤ RAM per element).

Objective function is allocating more capacities on borders with high spreads

Simultaneous allocation on all borders leads to higher collateral

Border-by-border, ATC, sequential auctions

- Exact offered (and allocated) capacity is known in advance
- Collateral is freed once previous auction is done

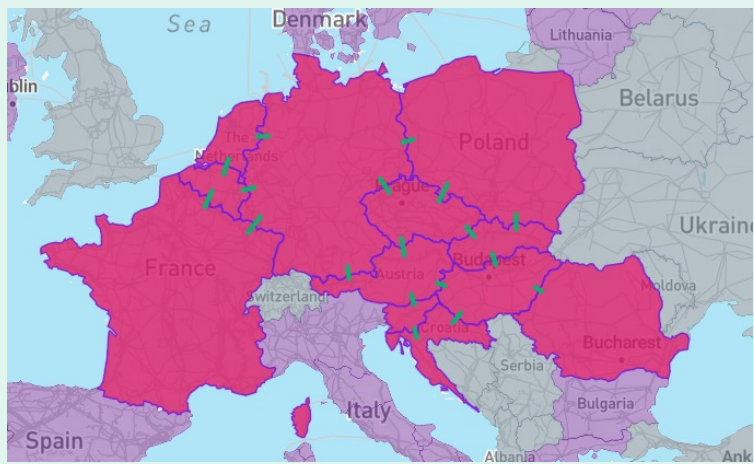
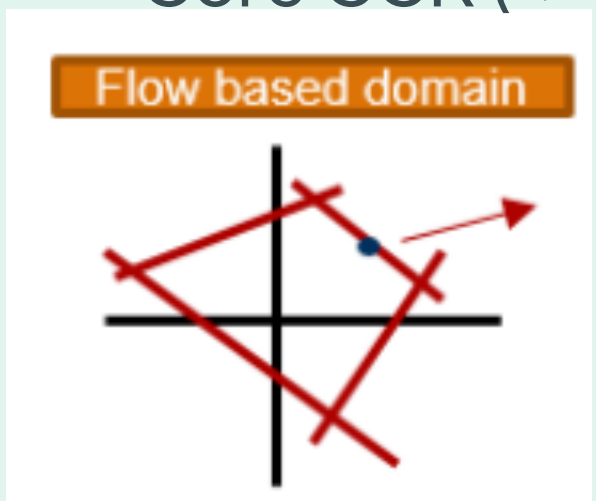
INTERCO	AT-CZ	CZ-AT	CEEXD	AT-HU	HU-AT	AT-SI	SI-AT	CZ-DE(TenneT)	DE(TenneT)-CZ	CZ-SK	SK-CZ	HU-SK	SK-HU	HU-SI	SI-HU	HR-SI	SI-HR	BE-DE	DE-BE	AT-DE	DE-AT	HR-HU	HU-HR	HU-RO	RO-HU	BE-NL	NL-BE	DE-NL	NL-DE
	19/11																	24/11						27/11					
Auction end																													
Time	13:40		13:50	14:10	14:20	14:30	14:40	14:50	15:00										14:10	14:40	14:50	15:00					13:30	13:40	



LTFBA: One big auction per Capacity Region

- Borders are competing for the same capacity
- Allocated capacities not known in advance (only FB domain is)

Core CCR (-> Central with ITn joining)



Collateral need to increase importantly depending on the amount of borders a participant is active in

N-SIDE's promising fix: filter bids using the actual market clearing price (MCP) instead of a static cap.
-> Tested as a proof-of-concept decoupled from the November 2026 likely live only in 2027 (unclear when)

Required collaterals much higher than in today's setup for the Go Live

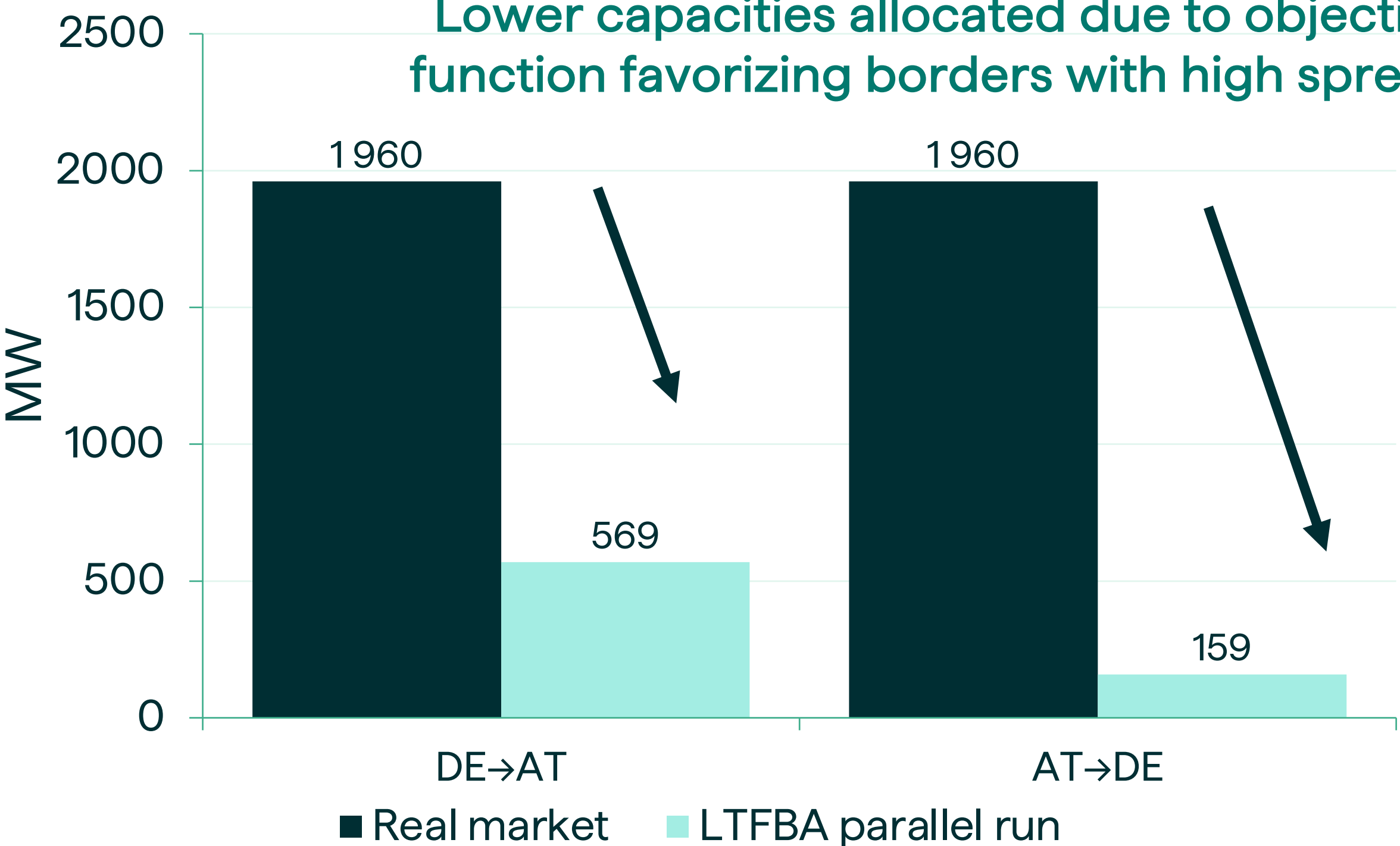
LTFBA Parallel run results – Yearly analysis



ATC bids used from 2025
no exact comparison possible

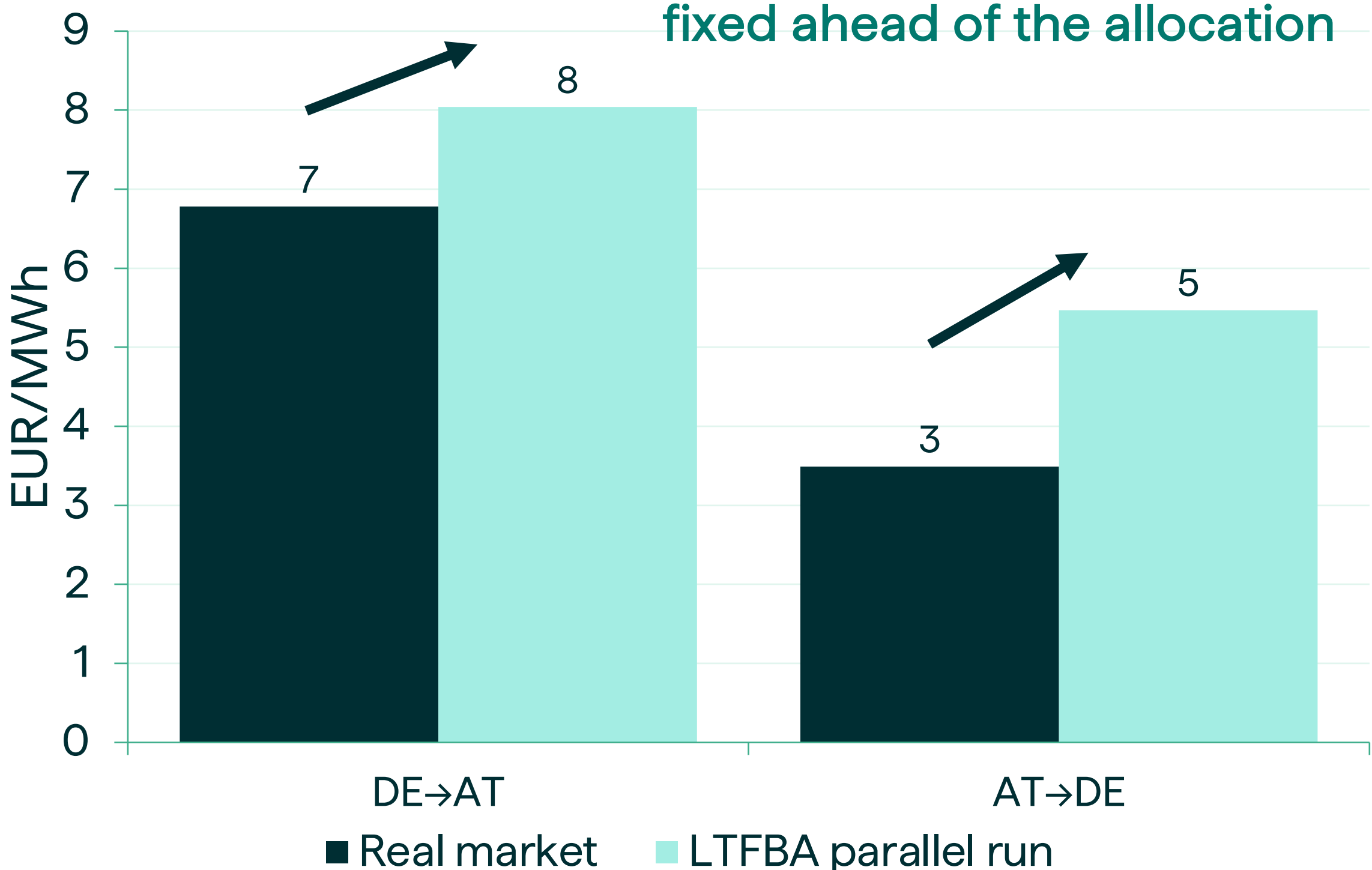
Allocated volume

Lower capacities allocated due to objective function favorizing borders with high spreads



Clearing price

Higher price as capacity is not fixed ahead of the allocation



LT FBA is allocating much lower capacities than today for AT<>DE and for a higher price

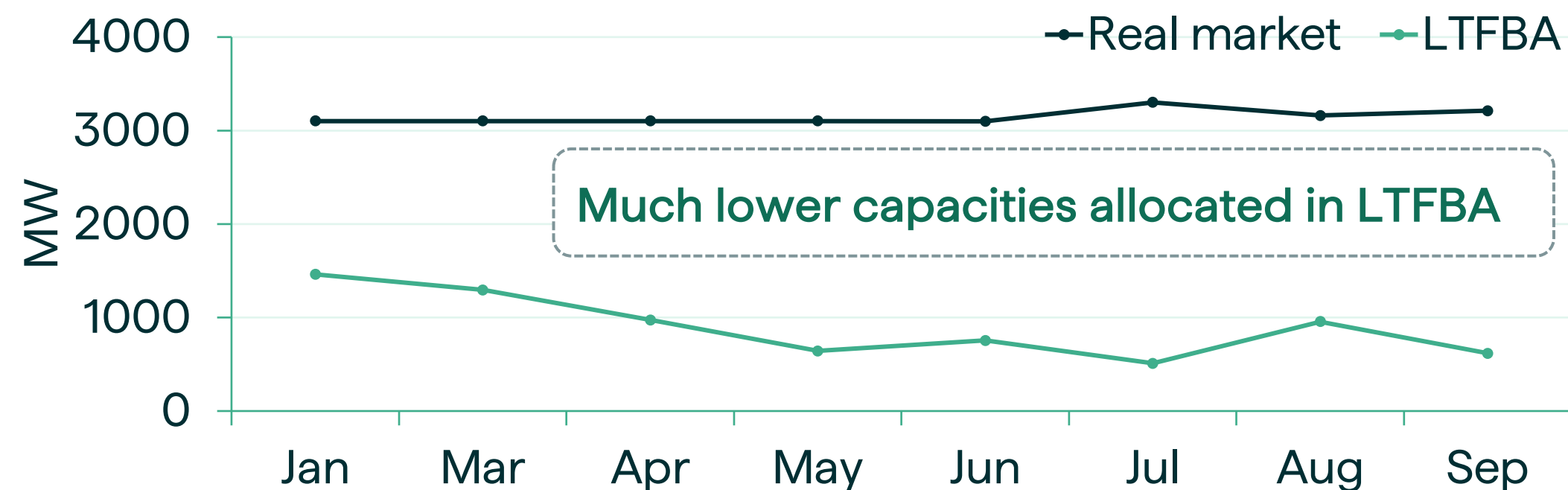
LTFBA Parallel run results – Monthly analysis



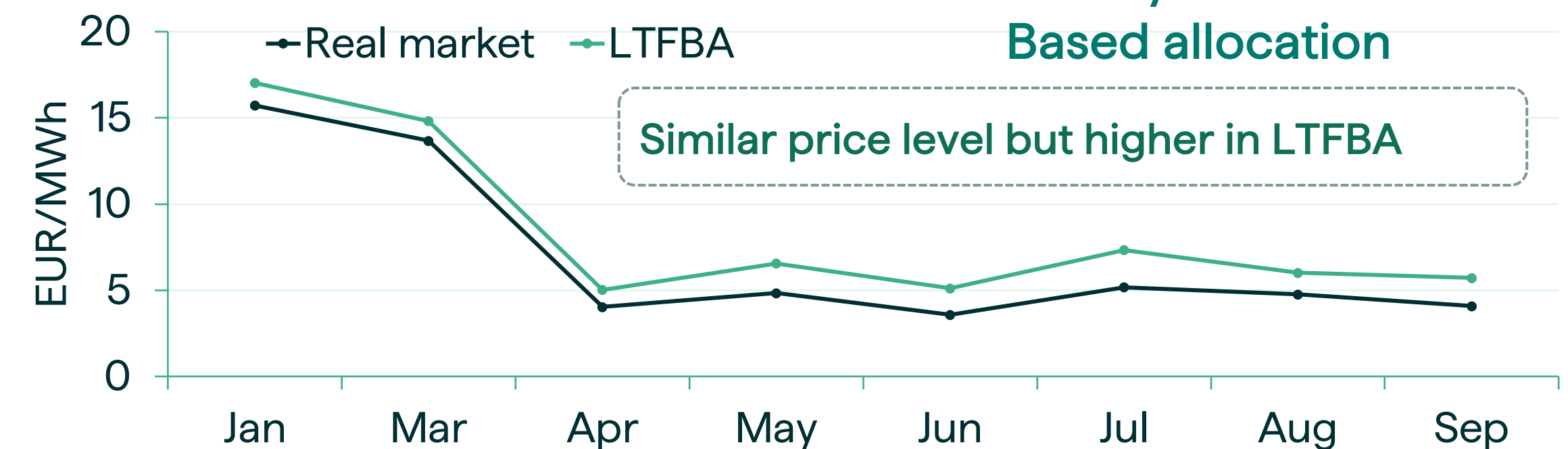
ATC bids used from 2025
no exact comparison possible
February missing

DE→AT degrades gracefully under the flow-based method; AT→DE collapses to near-zero in Jun–Jul with a matching price spike

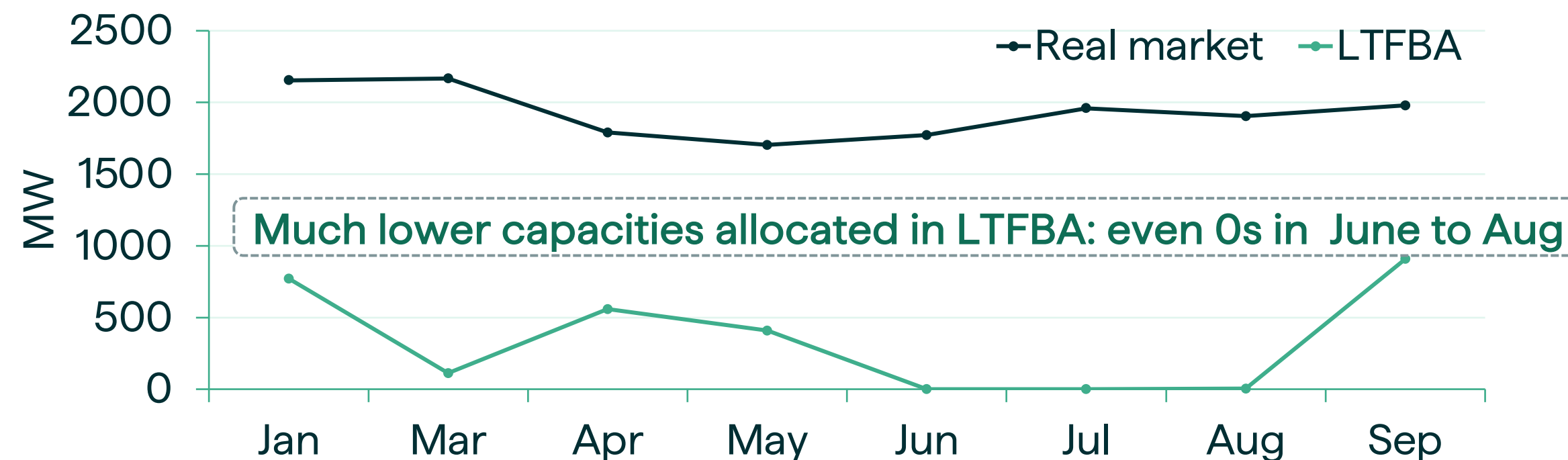
DE→AT — allocated volume (MW)



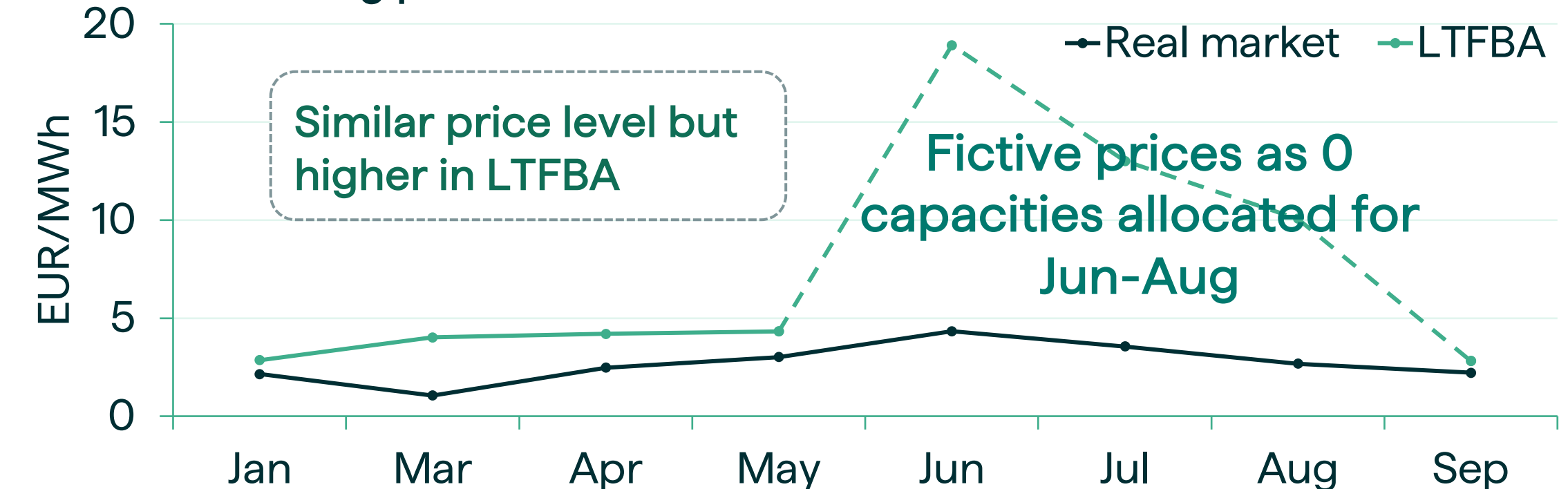
DE→AT — clearing price (EUR/MWh)



AT→DE — allocated volume (MW)



AT→DE — clearing price (EUR/MWh)



LT FBA is allocating much lower capacities than today for AT<>DE and for a higher price

Go-live and auction calendar

Details are still subject to change — JAO will confirm the final calendar by end September 2026

Planning principle: each capacity calculation run spans 5 consecutive business days ahead of opening, always starting on a Monday and is scheduled to avoid Luxembourg bank holidays.

First yearly auction for delivery 2027

- **27 Nov**
Flow-based parameters received
- **30 Nov**
Bidding window opens
- **4 Dec**
Bidding closes

First monthly auction for delivery January 2027

- **18 Dec**
Flow-based parameters received
- **21 Dec**
Bidding window opens
- **23 Dec**
Bidding closes

**Tighter sequence than today's process with some changes:
flow-based input parameters and collateral price cap**

FCA 2.0

Motivation: Forward Capacity Allocation (FCA) Guideline

EMD entry into force
16.07.24

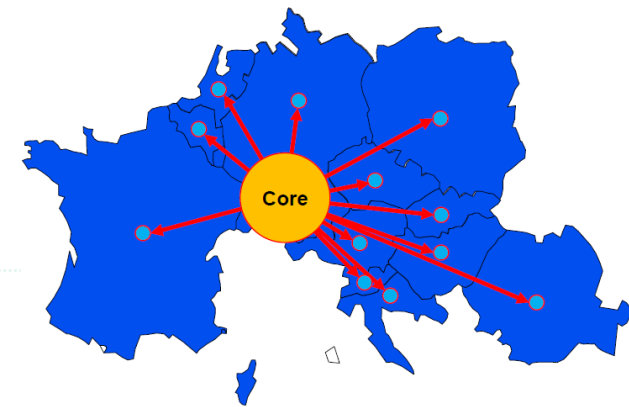
16.01.2026

16.07.2026

From FCA 1.0 towards FCA 2.0

European Market Design Reform (EMDR)

$$P_t^{hub} = \sum_{z=1}^z w_t^z \cdot P_t^z$$



Changes from Art. 9 of former (EU) 2019/943

- Virtual Hubs
- Switching to obligation (product change)
- Longer maturities up to 3 years ahead
- Full financial firmness
- Higher auction frequency
- Secondary markets



Already delayed, further timing unknown

Impact
Assessment

Adoption of
implementing act,
based on the
outcome of the
impact
assessment

Incoming impact assessment & amendments
proposal will be crucial.

Role of member states to be important for
advocacy (Cross Border Committee)

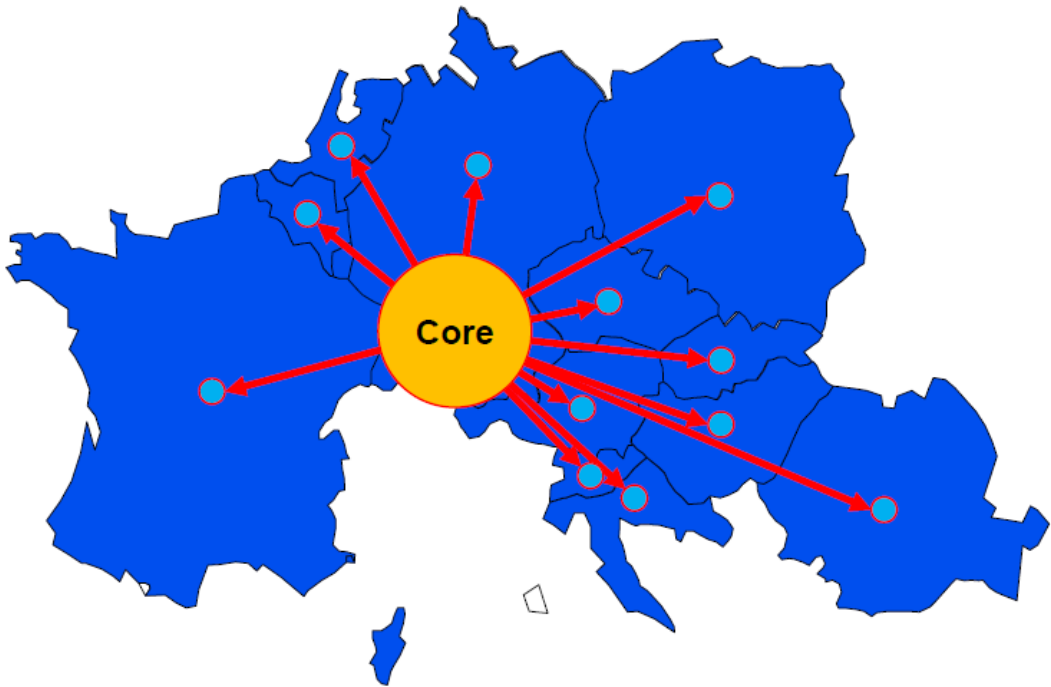
Possible changes to be implemented within FCA 2.0

Virtual Hubs

$$P_t^{hub} = \sum_{z=1}^Z w_t^z \cdot P_t^z$$

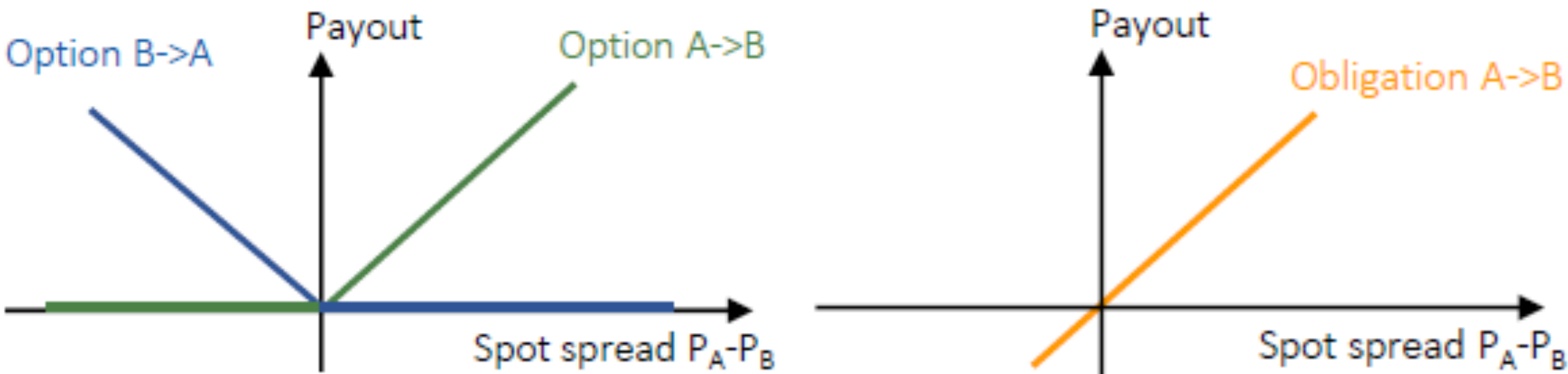
Volume weighted price index

Allocations Core_Hub <-> BZx



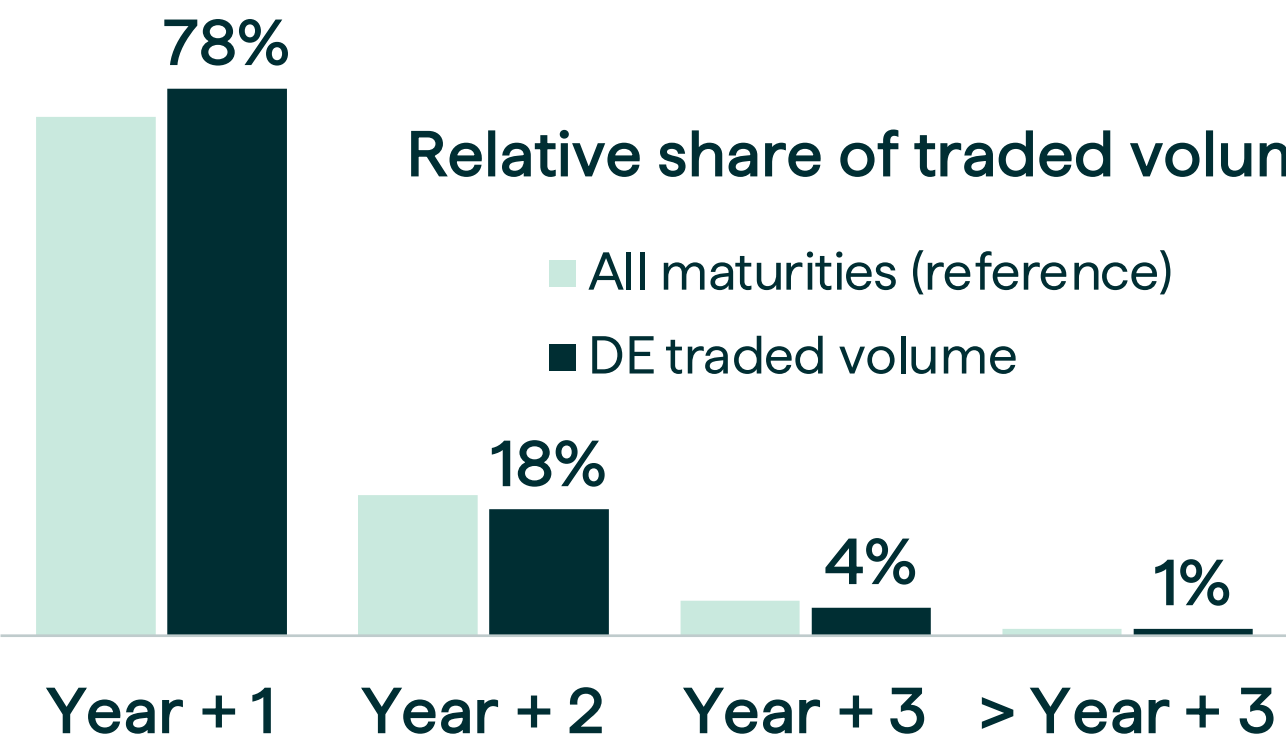
- New Core-Hub product in competition with existing Futures/Forward markets
- Would only make sense if DE BZ is split in many small BZs.
- Germany as hub instead of Core could make sense in today's setup

Switching to obligation



- Option matches TSOs' exposure exactly.
- Obligation matches traded spread futures but could require collateral for TSOs depending on the setup.

Longer maturities up to 3 years ahead



Relative share of traded volume between maturities

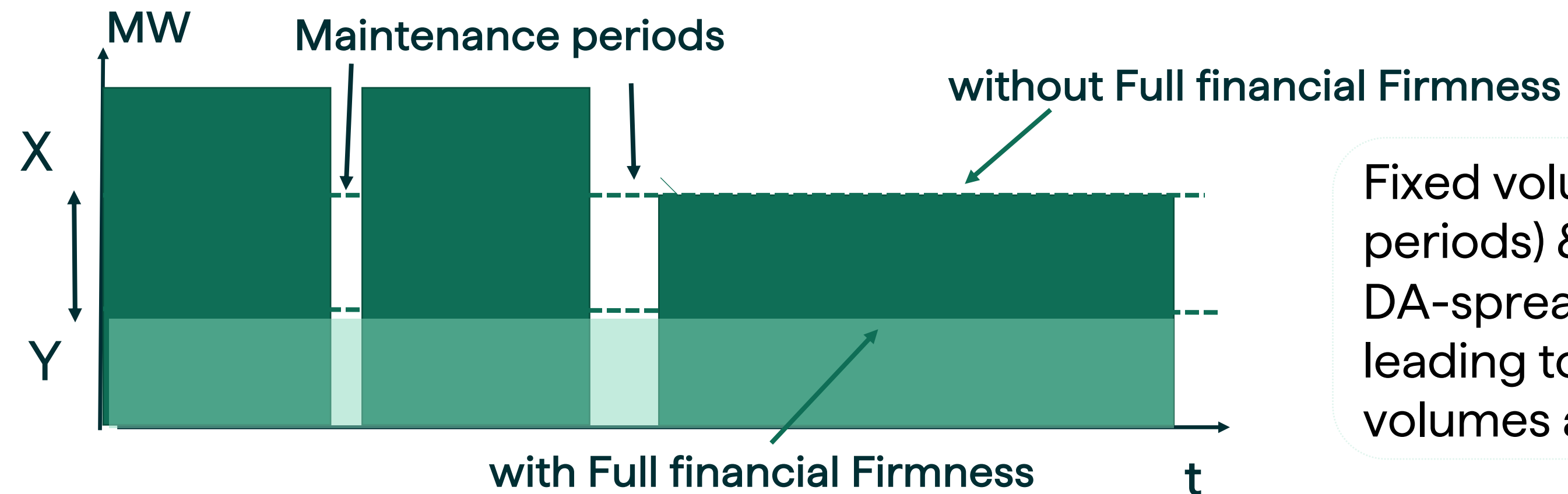
■ All maturities (reference)
■ DE traded volume

(DE, 2021-2023),
source: ACER
MMR

- New capacity calculation method required (statistical flow-based?)
- Likely split of available capacities matching existing liquidity for front products.

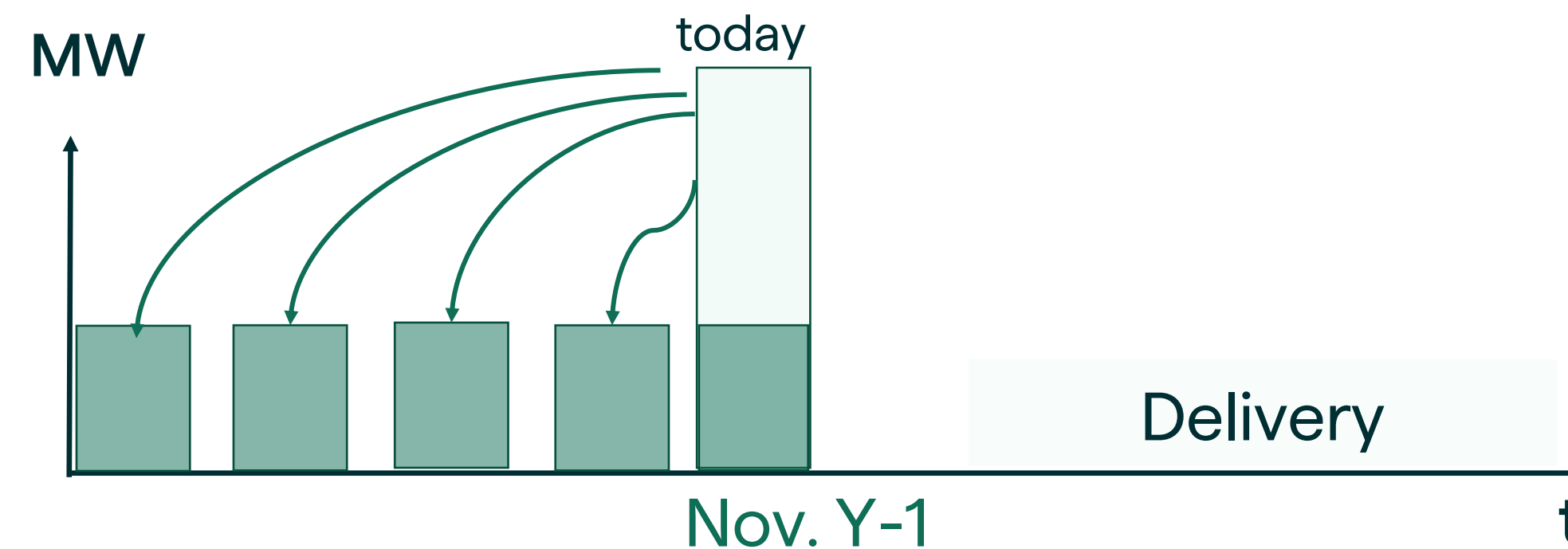
Possible changes to be implemented within FCA 2.0

Full financial firmness



Fixed volume (no maintenance periods) & fixed remuneration (always DA-spread) components possible, but leading to higher TSOs risk & lower volumes at a same risk level.

Higher auction frequency



Pending on volume determination method, trade-off to be found between number of auctions and offered volume per auction.

Secondary markets



Likely no further secondary markets required if product switch towards obligation and JAO auctions are frequent enough

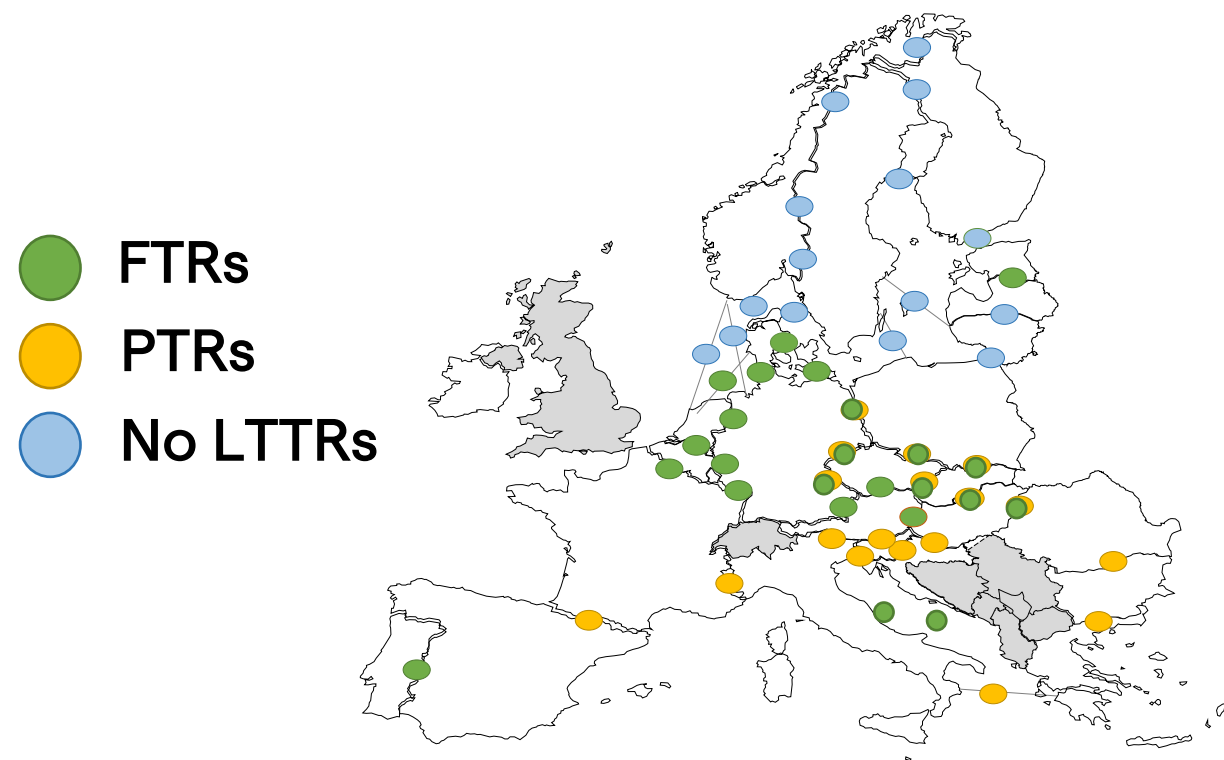
Summary

Long term market design changes– quo vadis?

LT FBA is just one stop on the way

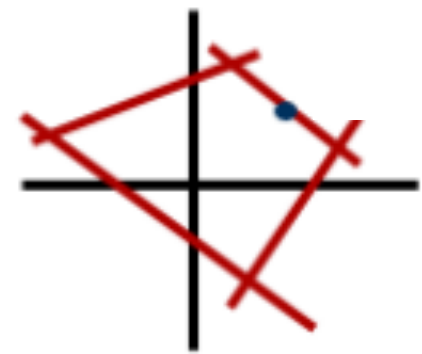
European Market Design Reform
Target Model -> FCA 2.0

1 Bilateral NTC, per border
Status Quo



2 Long Term Flow-Based Allocation
GoLive this November, Interim

Flow based domain

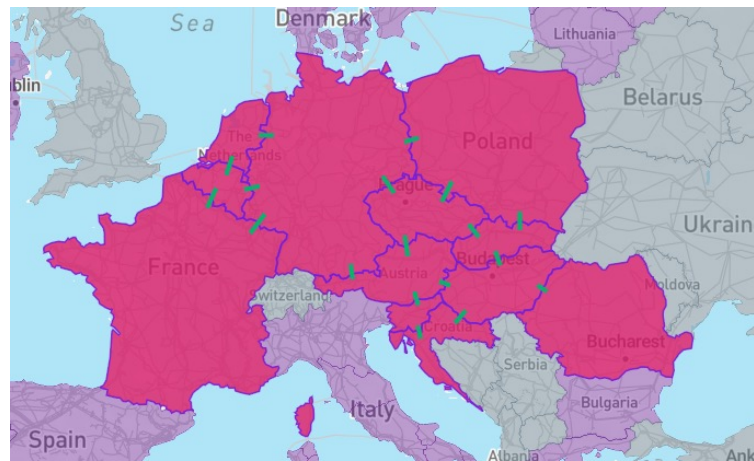


„one big auction“ per CCR

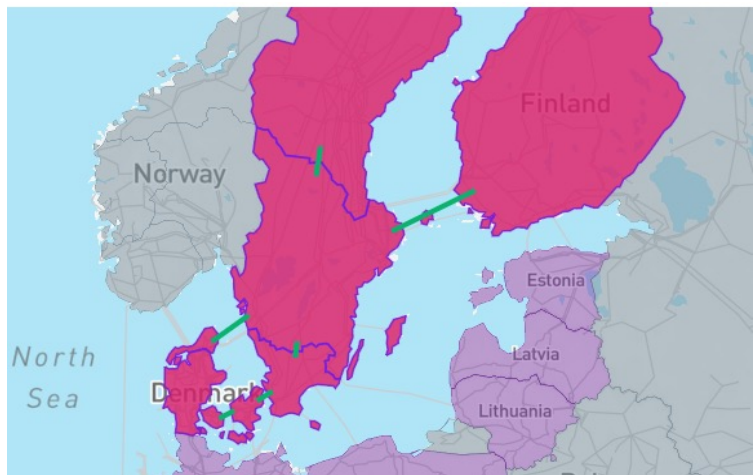


- 1. Low capacities
- 2. Collateral

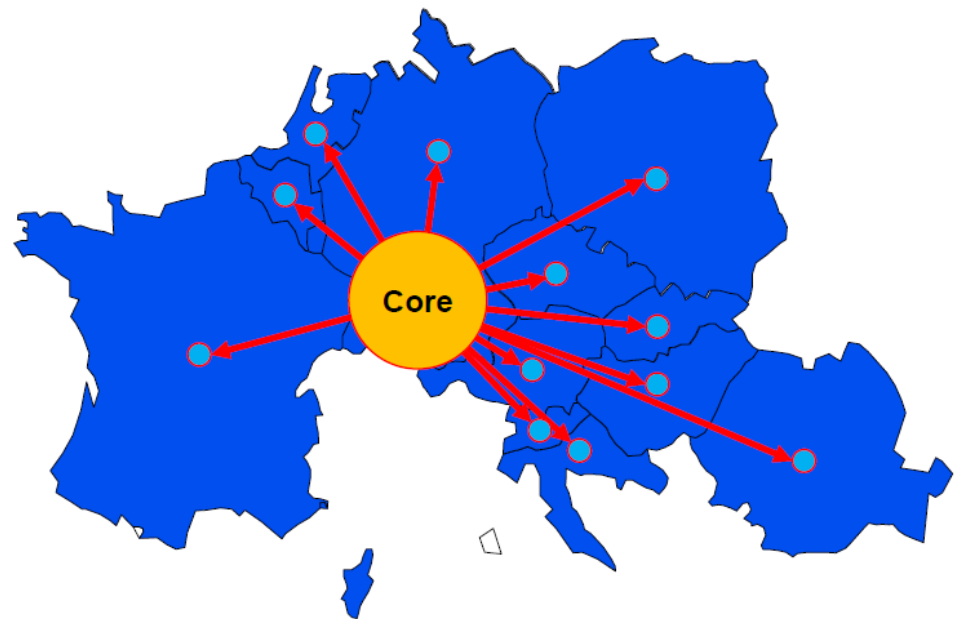
Core CCR



Nordic CCR



$$p_t^{hub} = \sum_{z=1}^z w_t^z \cdot P_t^z$$



Changes from Art. 9 of former (EU) 2019/943

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Austrian Deep Dive

Thanks for listening

Meet us today



Vincent Thevenin

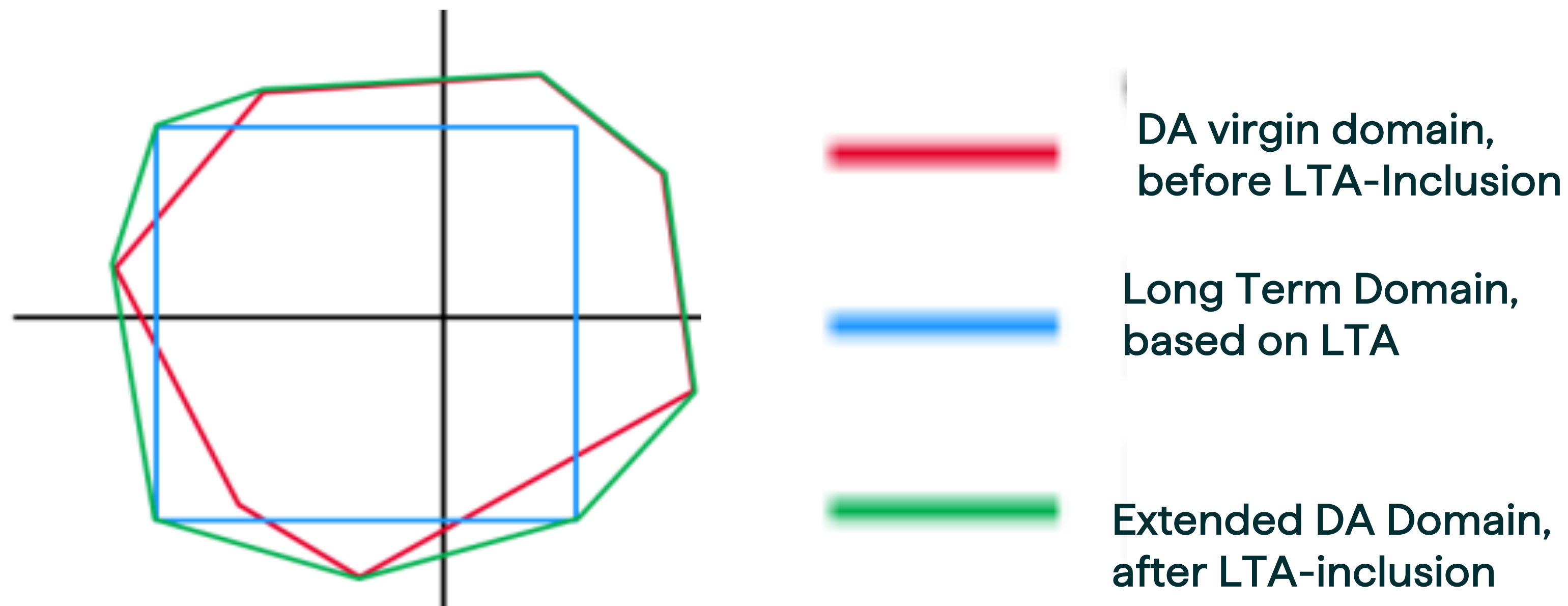
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vincent.thevenin@montel.energy

What questions do you have?

BackUp

Already planned change

Removal of Long Term Allocation Inclusion



Goal is to ensure revenue adequacy for each single MTU. To be removed in order not to endanger the physical grid reality, especially in case of Full financial Firmness.