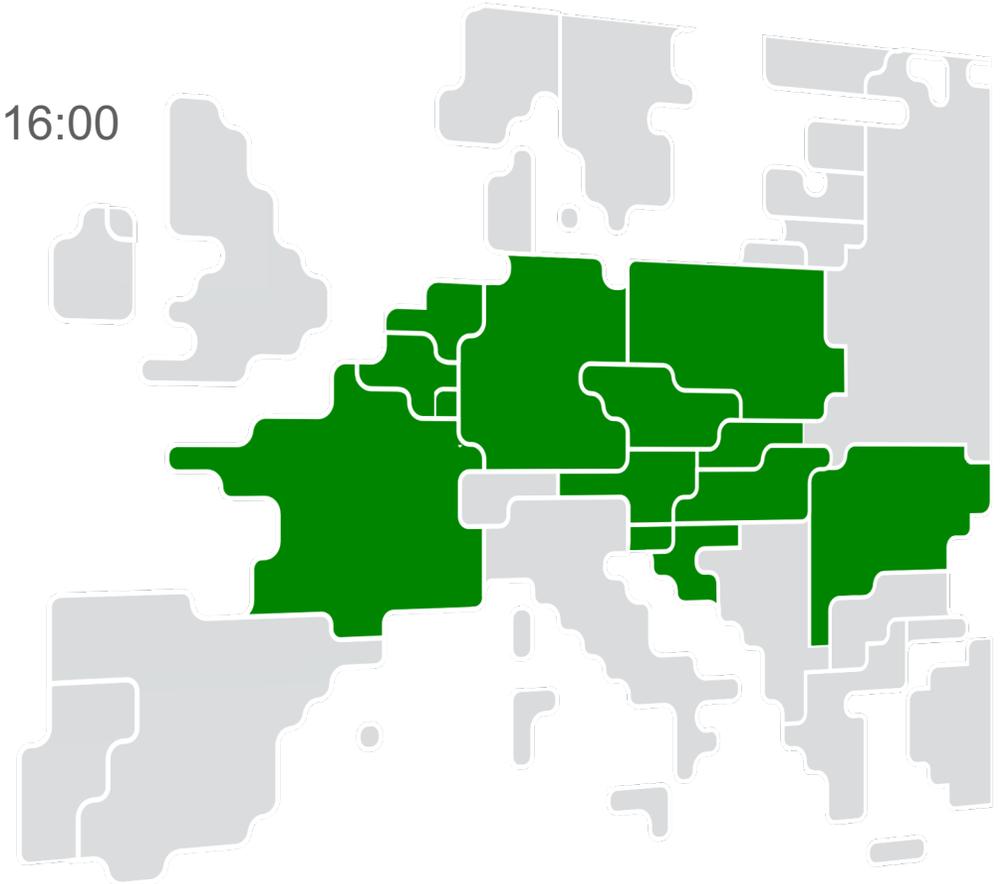




Core Consultative Group meeting

29 November 2021, 09:00 – 16:00

MS teams websession



1. Welcome and Introduction

Practicalities, announcements and reminders

R.OTTER/
H.ROBAYE



Co-chairs



Hélène ROBAYE (Market Participants, Eurelectric)

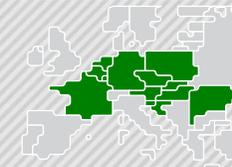


Ruud OTTER (Core TSOs, Tennet BV)

Practicalities

- During meeting
 - Use of 'hand' function will facilitate all participants to have the opportunity to ask questions
 - Use of 'chat' function will give opportunity to address all questions and will facilitate proper tracking and answering
- Follow up
 - Minutes and final meeting documents will be shared with CCG distribution list
 - JAO Q&A forum
- MS teams workshop and Q&A will be recorded and made available for all Market Participants

1. Welcome and introduction



Agenda

	SUBJECT	WHO	TIMING
1	Welcome and introduction <ul style="list-style-type: none">• Feedback on Market Parties introduction workshop 22/11	R.OTTER/ H.ROBAYE	09:00 – 09:15
2	Day Ahead Capacity Calculation & Market Coupling <ul style="list-style-type: none">• Core FB DA MC roadmap, important milestones and <i>expectations to Core FB MC go live</i>• Rollback scenario principles• External parallel run and walk through KPIs• NRAO HL view on the results. Impact on results/capacities when NRAO is applied• Static Grid Model• Publication Tool	M.PREGL/ G.MEUTGEERT	09:15 – 10:30
3	Intraday Capacity Calculation <ul style="list-style-type: none">• Status update and next steps• Key challenges faced by TSOs• IDCCM amendments – principles and background	W.SNOEREN	10:30 – 11:00
4	Regional Operational Security Coordination <ul style="list-style-type: none">• Status update and next steps• Integration of non-Superposable RAs (topological measures) in global optimization	P.SHAFFER	11:15 – 11:45
5	Long Term Capacity Calculation <ul style="list-style-type: none">• Status update and next steps• Presentation EFET and EURELECTRIC	J.FERNANDEZ / EFET_ EURELECTRIC	11:45 – 12:15
6	Information access in Core <ul style="list-style-type: none">• Update on the work on improving information access	R.OTTER	12:15 – 12:30
7	AOB & closure <ul style="list-style-type: none">• Q&A forum on JAO website• Next CCG meeting	R.OTTER/ H.ROBAYE	12:30 – 12:45

break 11:00 – 11:15

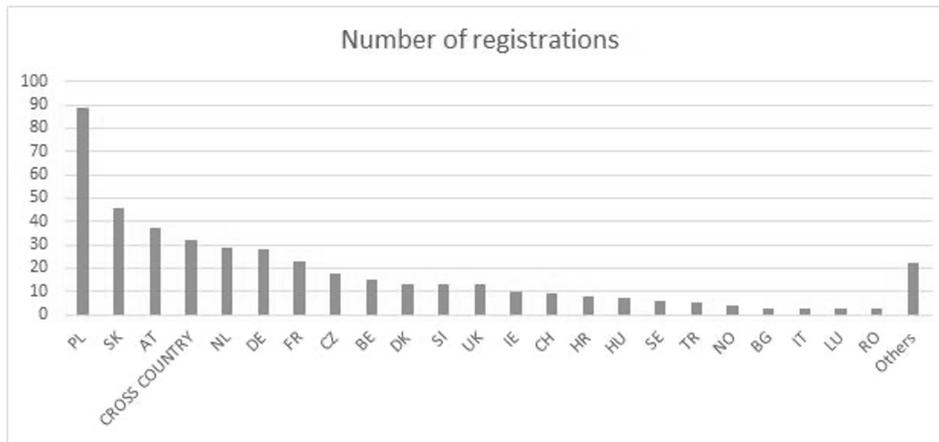
1. Welcome and introduction



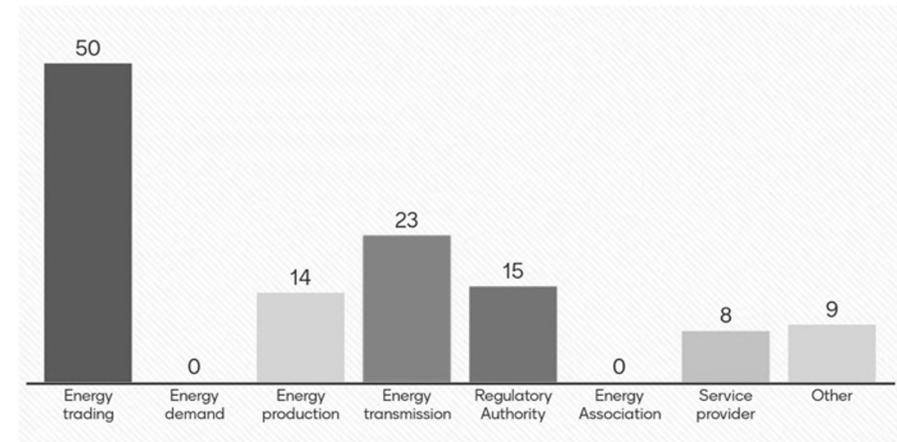
Feedback on Market Parties introduction workshop 22/11 (1-2)

On Monday 22/11 Core project parties organised an online Introduction to Core DA FB MC. Some facts & figures:

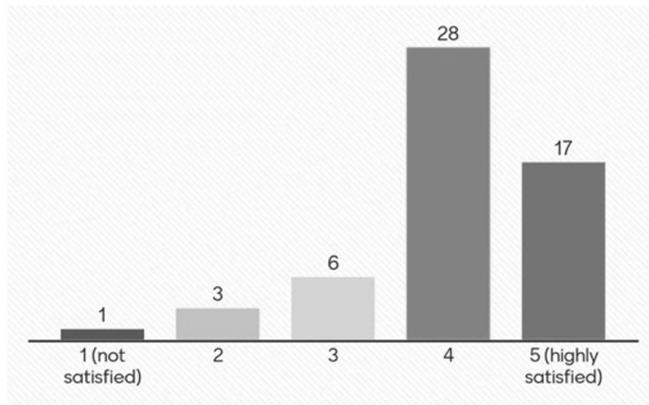
- **Number of participants:** appr. 450 registrations, around 350 people actually joined the webinar



- **About the participants:** Most participants are active in Energy trading



- **Satisfaction rate:** overall quite satisfied with the webinar!



1. Welcome and introduction



Feedback on Market Parties introduction workshop 22/11 (2-2)

Core project parties will share the webinar materials with MPs via the following channels:

- **Dedicated section Core CCR on ENTSO-E website:** https://www.entsoe.eu/network_codes/ccr-regions/#core
 - You will find here in the coming weeks the webinar presentations (PDF), a link to the webinar recording and a file with Q&As
- **Via email:** all people who registered should have received the webinar presentations (PDF) on 26/11
 - Once available, the link to the recording of the webinar will be shared via email as well

Follow-up

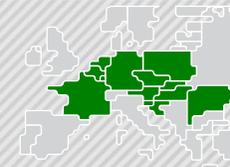
- During the webinar, participants were asked whether they missed any topics. The below responses were received. Core project parties will align on follow-up.



Question to MPs: is there a need for follow-up workshops on other topics?

2. Day Ahead Capacity Calculation & Market Coupling

M.PREGL



Core FB DA MC Go Live postponed

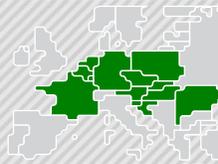
Introduction

- Core projects parties regret to inform market participants that the go live of the Core Flow Based market coupling (FB MC), currently planned for end of February 2022, will be postponed.
- External dependencies delayed the timely start of the first phase of Core Joint Integration Testing. In addition, technical issues encountered during the first weeks of the Joint Integration Testing, require extending the testing phase to ensure robustness of the systems.
- Fixes are being prepared to commence the required re-testing. Project parties are working hard to minimise the delay. Due to high complexity of the systems and necessary alignment with external parties, current expectation is that the go live would take place between beginning of Q2 2022 at the earliest and before the end of Q2 2022 at the latest.
- Given these circumstances, Core project parties prepared an updated test planning and Core FB MC roadmap optimising the testing schedule to reduce the postponement of go live of Core FB MC as much as possible.
- The new go live date highly depends on the time needed to arrive at a go live with reliable and robust systems and
 - the further progress of the test planning and
 - alignment with external parties (e.g. the SDAC)
- Core Joint project parties can confirm already that the external parallel run as performed today will be continued.
- Core project parties will inform all stakeholders on the new go live date when there is clarity related to those dependencies

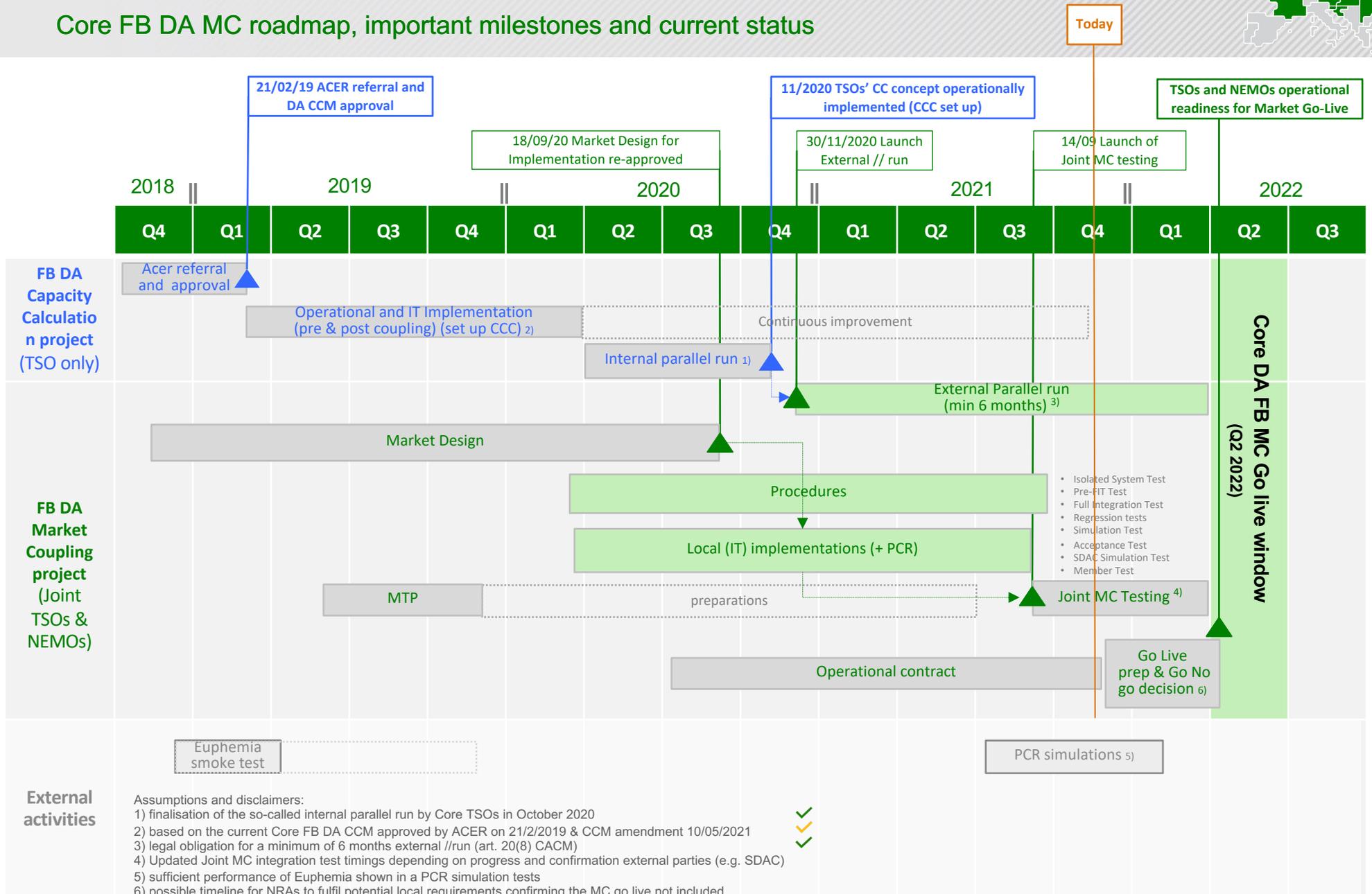
The latest Core FB MC roadmap can be found on the next slides, showing

- The new Go Live window from beginning of Q2 2022 to the end of Q2 2022
- Core project parties aim to have the Go Live as soon as possible once a reliable and robust Go Live can be assured

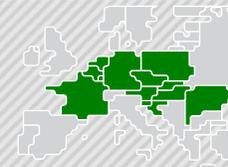
2. Day Ahead Capacity Calculation & Market Coupling



Core FB DA MC roadmap, important milestones and current status



2. Day Ahead Capacity Calculation & Market Coupling



Rollback principles

Rationale, definition and triggers

- As Core FB MC go-live implies significant system changes, a rollback process exists for the case of unexpected issues that cannot be resolved on short-term and would result in a long period of daily decoupling
- Rollback means going back to the systems, procedures and agreements in place before Core FB MC go-live (with some exceptions)
- The possibility to rollback is available for 6 weeks after Core FB MC go-live
- Core project parties concluded on 3 possible rollback triggers
 - 1) Full decoupling of SDAC
 - 2) Partial decoupling of Core
 - 3) The capacity calculation results in default FB parameters
- During the preparation of the rollback, no market coupling will take place in Core region (fallback procedures will be applied)

Rollback framework

- The rollback principles are defined in Core procedure ROB_01
- Core rollback is covered by Core legal framework, through Core Day Ahead Operational Agreement)
- Parties presented high-level presentations about the chosen system set-up (on local and regional level) for rollback and informed service providers and vendors about the rollback principles

Regional coordination

- Readiness of other SDAC regional projects (IBWT, ICP, CWE MNA, PL MNA, Nordic MNA, Litgrid) for Core rollback is being monitored by Core FB MC
- ROB_01 procedure will be shared with these regional projects

2. Core FB Day Ahead Capacity Calculation & Market Coupling



External // run

Results are being published on the [JAO website](#) on daily basis (capacity calculation results) in the so called: “PuTo” (Publication tool)

Market Simulations are published on D+28 as separate files on the [JAO website](#) on the same page as PuTo at the bottom

- There are market simulations results missing, which can be caused by:
 - DFPs from a back-up tool, which does not provide output for simulations
 - Specific issues related to the simulation facility

Core EXT parallel run - Published BDs, limitations and Ramr values are updated every week – [LINK](#)

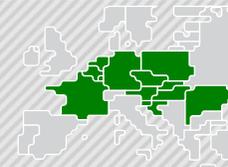
Status KPI reports - [LINK](#)

- Core FB KPI reports until August were prepared and published

Filename	Last Update	Download
20210903_20210903_Period_SF_results_SDAC_A.zip	16/09/2021	Download
20210903_20210903_Period_SF_results_CORE_A.zip	16/09/2021	Download
20210903_20210903_Period_SF_results_SDAC_B.zip	16/09/2021	Download
20210903_20210903_Period_SF_results_CORE_B.zip	16/09/2021	Download
20210903_20210903_Period_SF_results_SDAC_C.zip	16/09/2021	Download
20210903_20210903_Period_SF_results_CORE_C.zip	16/09/2021	Download
20210903_20210903_Period_SF_results_SDAC_D.zip	16/09/2021	Download
20210903_20210903_Period_SF_results_CORE_D.zip	16/09/2021	Download
20210903_20210903_Period_SF_results_SDAC_E.zip	16/09/2021	Download
20210903_20210903_Period_SF_results_CORE_E.zip	16/09/2021	Download

Filename	Last Update	Download
Core FBMC_EXT-run_assumptions_limitations_FINAL.pdf	16/09/2021	Download
Core EXT parallel run - Published BDs, limitations and Ramr values_2021	16/09/2021	Download

2. Day Ahead Capacity Calculation & Market Coupling



External // run: market coupling simulations summary

Update on EXT//RUN Market Coupling simulations

- Analysis of prices, net positions, and location of limiting elements for **period after Interim Coupling go-live (18/06/2021 – 18/09/2021)**; 88 BDs, 1790 MTUs without and 322 MTUs with DFPs), latest available market coupling simulations.

Summary

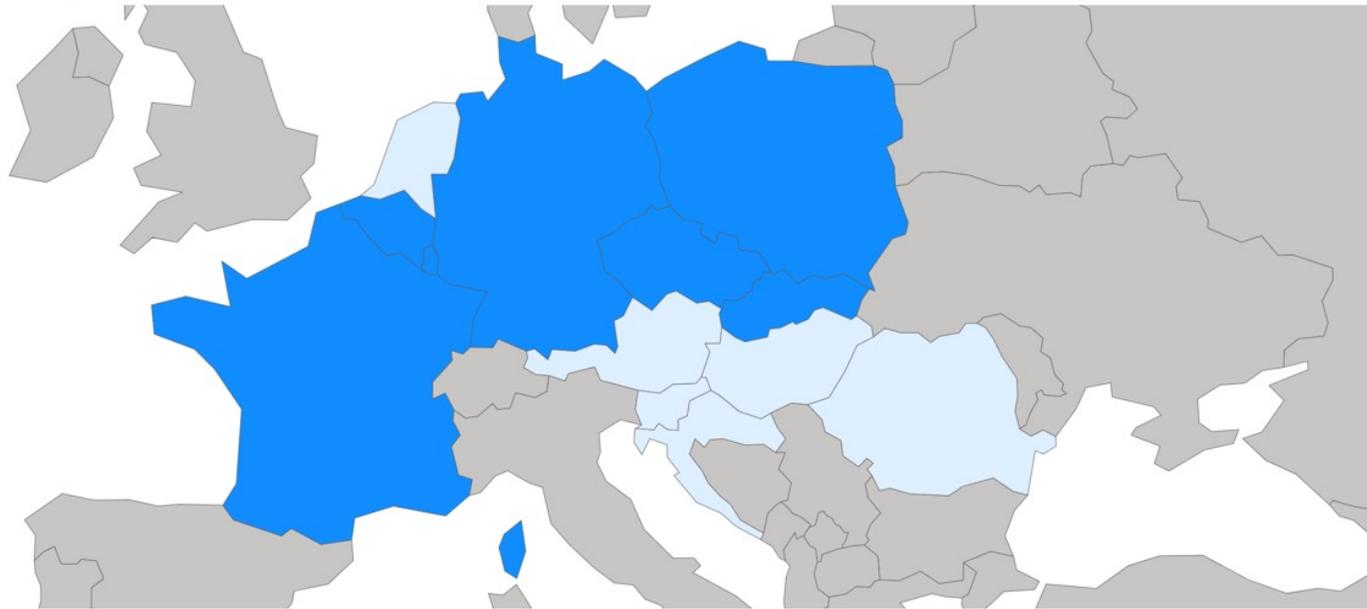
- Core market coupling net positions indicate that BE, CZ, DE/LU, FR, PL and SK are net exporting and AT, HR, HU, NL, SI and RO are net importing bidding zones in Core.
- When comparing prices of current day-ahead operations with outcomes of the Core //run simulations:
 - On average price decreases with Core FB MC can be observed in SI, HR, HU, RO, NL and DE/LU (decreasing order), which is in line with the net importing BZs. A future improvement could be (if data is easily available) to weigh the price difference with the volume traded.
 - **Price convergence within the whole Core region** is significantly higher in //run simulation (**23.15% of MTUs**) than in current operations (10.05% of MTUs).
- Location of limiting network elements:
 - The share of limiting network elements is nearly evenly divided between internal (53%) and cross-zonal (47%) when counting only occurrence (limiting yes/no).. Also when using the Shadow Price as weight to measure the extent of the limitation, the share of cross-zonal elements is the highest (~30%).

2. Day Ahead Capacity Calculation & Market Coupling



EXT // run results: Net Positions

Sum of Core MC net positions indicate that BE, CZ, DE/LU, FR, PL, and SK were net exporting bidding zones (dark blue) while AT, HR, HU, NL, RO, SI were net importing (light blue) bidding zones during the analysed period.

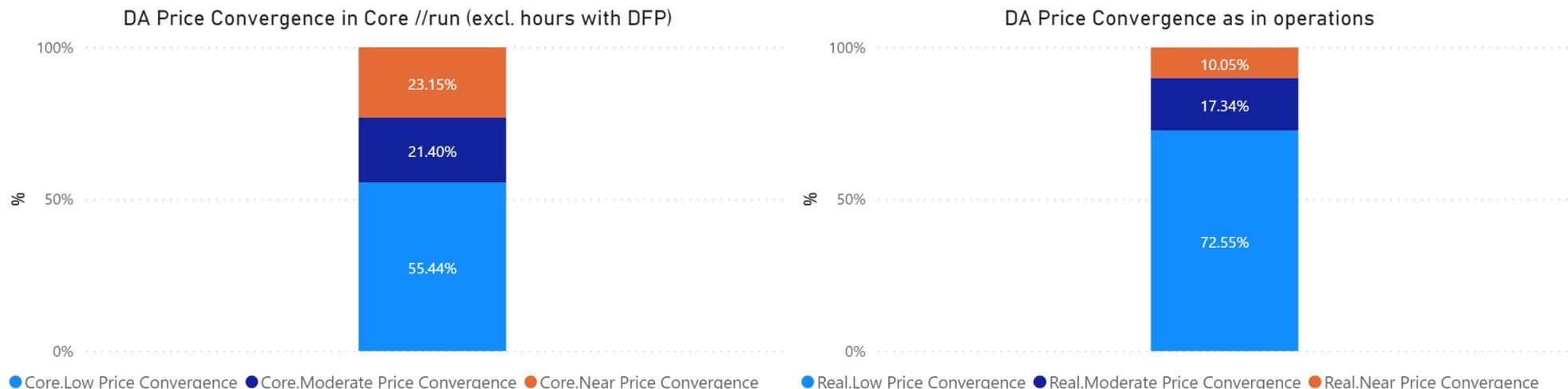


2. Day Ahead Capacity Calculation & Market Coupling



External // run: comparison of price convergence // run vs operations after ICP go-live (18/06/21 – 18/09/21)

Near and moderate price convergence are considerably higher in Core //run compared to current operations.



Definition of price convergence categories:

- Near price convergence: <1 €/MWh price difference,
- Moderate price convergence: 1-10 €/MWh price difference
- Low price convergence: >10 €/MWh.

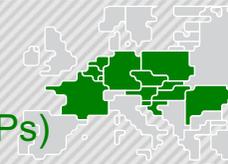
Core Full price convergence (maximum price difference = 0) was at 21.21% of the hours excluding DFPs.

Average Price (€/MWh) decreases* in Core //run can be especially observed for the importing BZs Croatia, Hungary, Romania and Slovenia.

AT	BE	CZ	DE/LU	FR	HR	HU	NL	PL	RO	SI	SK
0.13	0.58	0.00	-0.45	1.23	-6.02	-5.11	-0.61	0.57	-4.99	-6.41	1.75

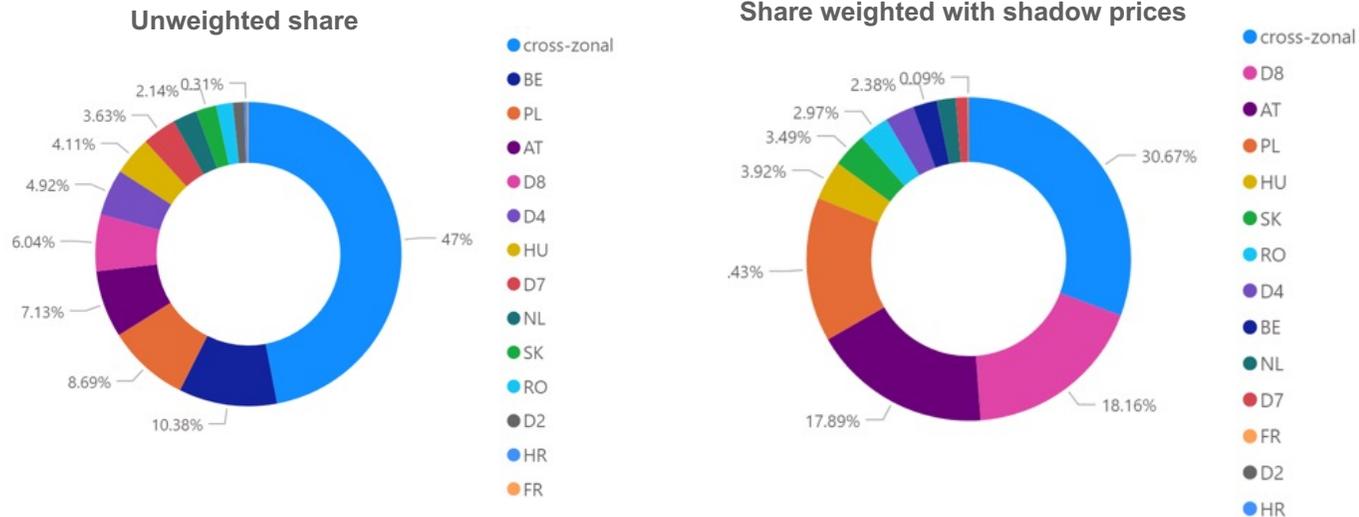
* (Price_Core – Price_Real) not weighted by traded volume.

2. Day Ahead Capacity Calculation & Market Coupling



External // run: location of limiting CNEs (CZ or internal) after ICP go-live (18/06/21 – 18/09/21) excl DFPs)

Highest shares for cross-zonal elements limiting the market coupling both when unweighted and weighted with shadow prices.

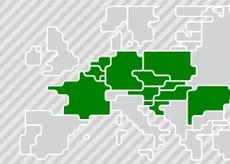


CNE	Count of Shadow Price	max z2zPTDF	RAM%
[BE-BE] Lixhe - Gramme 380.11 [OPP]	196	0.05	0.42
[FR-D7] Vigy - Ensdorf VIGY2 S [DIR] [D7]	186	0.10	0.34
[PL-PL] Krosno Iskrzynia - Rzeszow [OPP]	146	0.11	0.63
[D8-D8] Pasewalk - Vierraden 306 [DIR]	111	0.07	0.41
[D2-NL] Diele - Meeden SCHWARZ [DIR] [D2]	87	0.17	0.53
[HU-HU] Dunamenti - Oroszlany [DIR]	86	0.02	0.80
[AT-AT] Hessenberg - Weissenbach 223 [OPP]	64	0.05	0.44
[D8-PL] Krajnik - Vierraden 1 [OPP] [PL]	61	0.15	0.32
[NL-D7] Maasbracht - Oberzier SELFK WS [DIR] [D7]	58	0.14	0.61
[FR-D7] Vigy - Ensdorf VIGY1 N [DIR] [D7]	57	0.09	0.28
[BE-FR] Aubange - Mont St Martin 220.514 [DIR] [BE]	56	0.09	0.57
[SK-SK] V.Dur - Levice 2 [DIR]	56	0.17	0.43
[AT-AT] Westtirol 1 - Westtirol 2 WTRHU41 [OPP]	52	0.16	1.02
[BE-FR] Avelgem - Avelin 380.80 [OPP] [BE]	50	0.11	0.72
[D4-D4] PST Buers BMT37 [OPP]	49	0.06	0.90
[PL-PL] Mikulowa PST1 [OPP]	43	0.31	0.48
[CZ-PL] Wielopole - Nosovice [DIR] [PL]	40	0.03	0.58
[AT-D2] St. Peter 2 - Pleinting 258 [DIR] [AT]	38	0.11	1.25
[D8-D8] Neuenhagen - Vierraden 304 [DIR]	36	0.07	0.36
[SI-HR] 220kV Cirkovce - Zerjavinc [DIR] [SI]	36	0.07	0.99

CNE	Sum of Shadow Price	max z2zPTDF	RAM%
[AT-AT] Hessenberg - Weissenbach 223 [OPP]	25,802.15	0.05	0.44
[D8-D8] Pasewalk - Vierraden 306 [DIR]	20,580.43	0.07	0.41
[PL-PL] Krosno Iskrzynia - Rzeszow [OPP]	14,227.70	0.11	0.63
[FR-D7] Vigy - Ensdorf VIGY2 S [DIR] [D7]	10,094.32	0.10	0.34
[D8-D8] Neuenhagen - Vierraden 304 [DIR]	9,363.29	0.07	0.36
[D8-PL] Krajnik - Vierraden 1 [OPP] [PL]	8,886.66	0.15	0.32
[SK-SK] V.Dur - Levice 2 [DIR]	6,237.72	0.17	0.43
[AT-HU] Wien Suedost - Gyoer 245 [DIR] [AT]	6,189.64	0.06	0.72
[PL-PL] Morzyczyn - Dunowo [DIR]	6,037.42	0.09	0.27
[AT-AT] Duernrohr 1 - Etzersdorf 4348 [OPP]	5,731.16	0.07	0.10
[D2-NL] Diele - Meeden SCHWARZ [DIR] [D2]	5,471.10	0.17	0.53
[HU-HU] Dunamenti - Oroszlany [OPP]	4,233.02	0.07	0.81
[BE-FR] Aubange - Mont St Martin 220.514 [DIR] [BE]	3,884.38	0.09	0.57
[D4-D4] Grossgartach - Pulverdingen ws [DIR]	3,753.14	0.08	0.21
[RO-RO] TR Rosiori 400	3,677.06	0.01	0.40
[FR-D7] Vigy - Ensdorf VIGY1 N [DIR] [D7]	3,519.31	0.09	0.28
[PL-PL] Mikulowa PST1 [OPP]	2,780.59	0.31	0.48
[HU-HU] Gyor - Oroszlany [DIR]	2,779.31	0.09	0.74
[D8-D8] Graustein - Baerwalde 565 [DIR]	2,365.61	0.11	0.21
[BE-BE] Lixhe - Gramme 380.11 [OPP]	2,283.90	0.05	0.42

*ALEGrO was excluded, Allocation Constraints are not included (see next slide). If a TSO is not mentioned in the legend then no internal element was limiting the market coupling. The order of the legend indicates the shares. The maxz2zPTDF and RAM in % are averages when the element was limiting.

2. Day Ahead Capacity Calculation & Market Coupling



External // run: Application of Allocation Constraints after ICP go-live (18/06/21 – 18/09/21) excl DFPs)

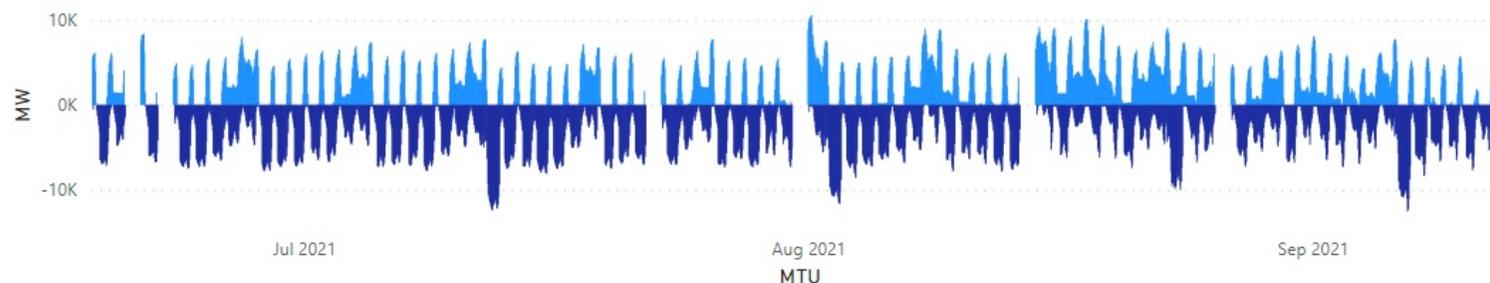
BE AC_import (MW) by MTU



BE AC_Import limiting (distinct hours)	BE AC_import (MW)	Min of BE AC_import (MW)	Max of BE AC_import (MW)
0	-7,349.99	-7,547.00	-6,876.00

PL AC_Export (MW) and PL AC_Import (MW) by MTU

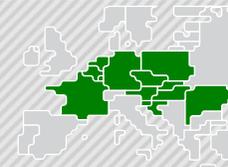
● PL AC_Export (MW) ● PL AC_Import (MW)



PL AC_Export limiting (distinct hours)	Average of PL AC_Export (MW)	Max of PL AC_Export (MW)	Min of PL AC_Export (MW)
668	350.99	3657	0
PL AC_Import limiting (distinct hours)	Average of PL AC_Import (MW)	Max of PL AC_Import (MW)	Min of PL AC_Import (MW)
66	-3,832.85	0.00	-12,580.00

Note that since the Belgian Import Allocation Constraint was not limiting in the analysed period the Average, Min and Max values refer to the whole period while for the Polish Allocation Constraints the values refer to the MTUs when it was limiting.

2. Core FB Day Ahead Capacity Calculation & Market Coupling



EXT // run results: NRAO background

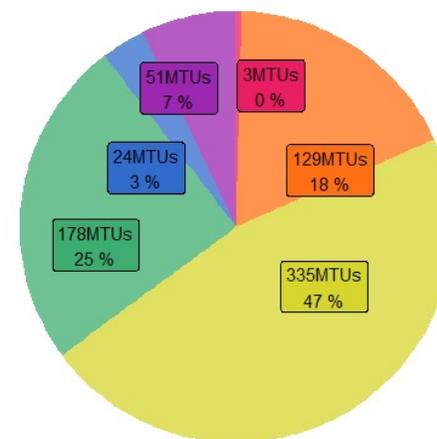
1/2

Background

- NRAO was integrated into the EXT // run on 28/04 for BD 30/04.
- Representative results are considered as of 04.06.2021. Before this date there were issues with TenneT NL CNEC considered as one element when there were 2 different ones.

On the analysis of NRAO in month of June 2021:

- The total number of MTUs (720 hours) was distributed as shown in the pie chart
- NRAO ran and applied Remedial Actions (RAs) during 335 MTUs (47 %), and the following BDs 04.06, 06.06, 07.06, 09.06, 10.06, 12.06, 14.06, 15.06, 17.06-25.06, 27.06 excluding the MTUs with DFPs and Spanning applied, which forms the bases of the relative time shares in the next slides.
- When RAs are not applied it is either due to business constraints (business rules) or due to process restrictions (CET=TET during June which has been changed in July)
- To validate the impact of NRAO on the Core DA CC process chain in a first attempt two questions were analysed:
 - Which RAs were applied and where were those located?
 - Which were the most limiting CNECs per TSO from which NRAO started its optimization?



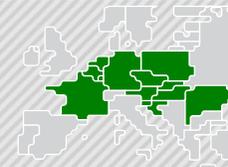
■ DFPs @ Initial ■ NRAO Did Not Run ■ NRAO Ran and Did Not Apply RAs
■ DFPs before Initial ■ NRAO Ran and Applied RAs ■ Spanning @ Initial

DFPs @ Initial –CGM was provided but Initial FB computation finished in DFPs.

DFPs before Initial –DFPs caused due to missing CGM

2. Core FB Day Ahead Capacity Calculation & Market Coupling

TSCNET



EXT // run results: NRAO background

2/2

Challenges

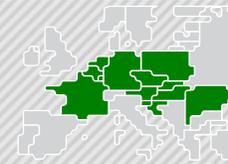
- Further KPIs were created to measure the extent to which NRAO influenced the available capacities, however there are still conceptual discussions so these can be only shown at a later stage. One main challenge encountered during the analysis is the amount of data (one BD yields unzipped 6-7 GB of NRAO data so nearly 200 GB for one month) which slowed down the KPI creation.

Next step:

- Analysis of activation of RA – assessing impact of loop flow and other constraints on activation of RAs in NRAO – one time analysis

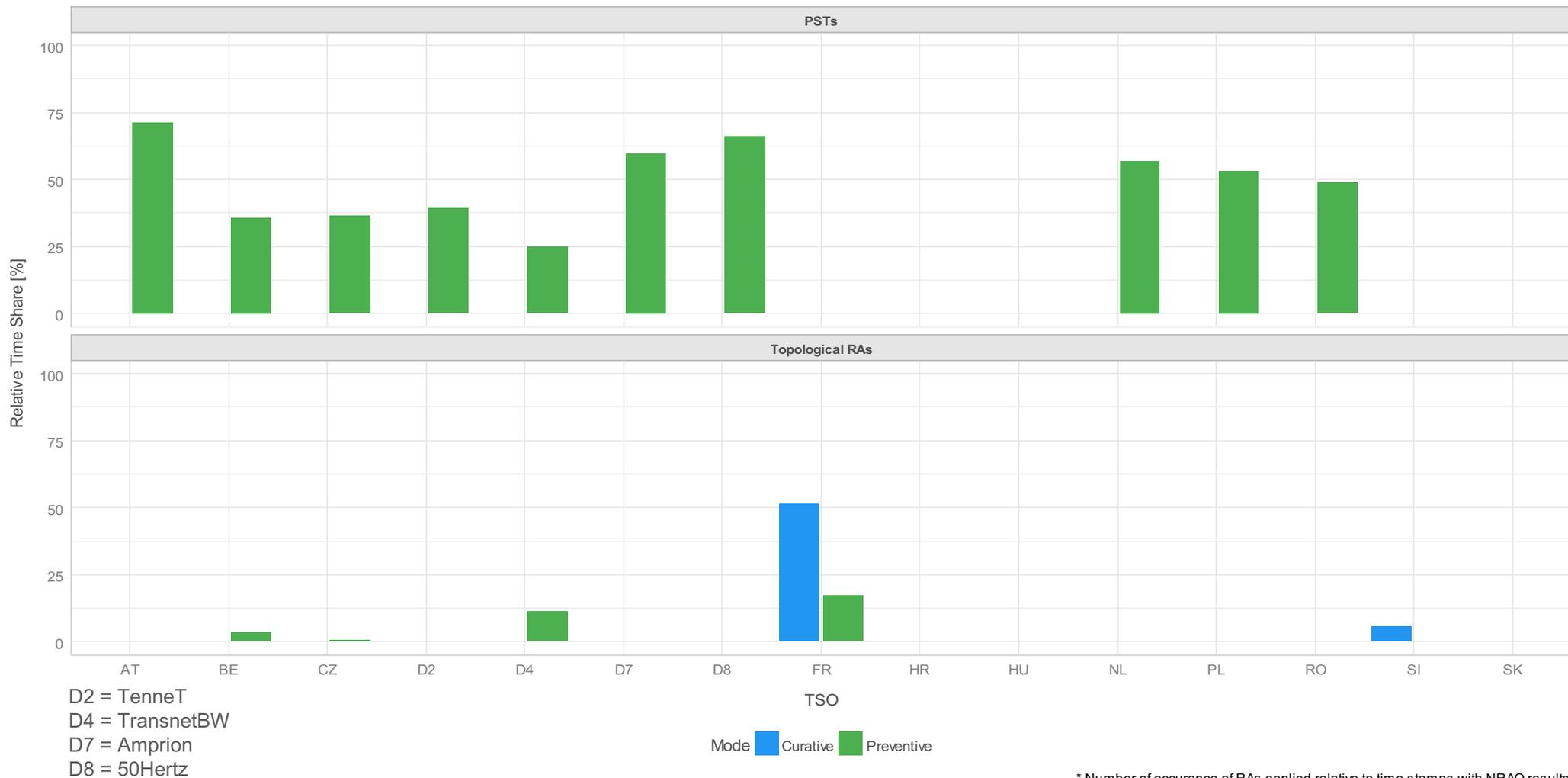
The NRAO KPIs for July and August can be found in the [monthly KPI reports](#) published in the Publication Tool.

2. Core FB Day Ahead Capacity Calculation & Market Coupling



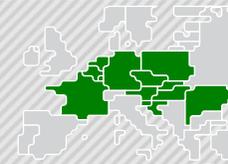
NRAO results interpretation: Relative Time Share of Applied RAs, by TSO, Type and Mode

NRAO: Relative Time Share* with at least One Non-Costly RA Applied During Month of June, by TSO

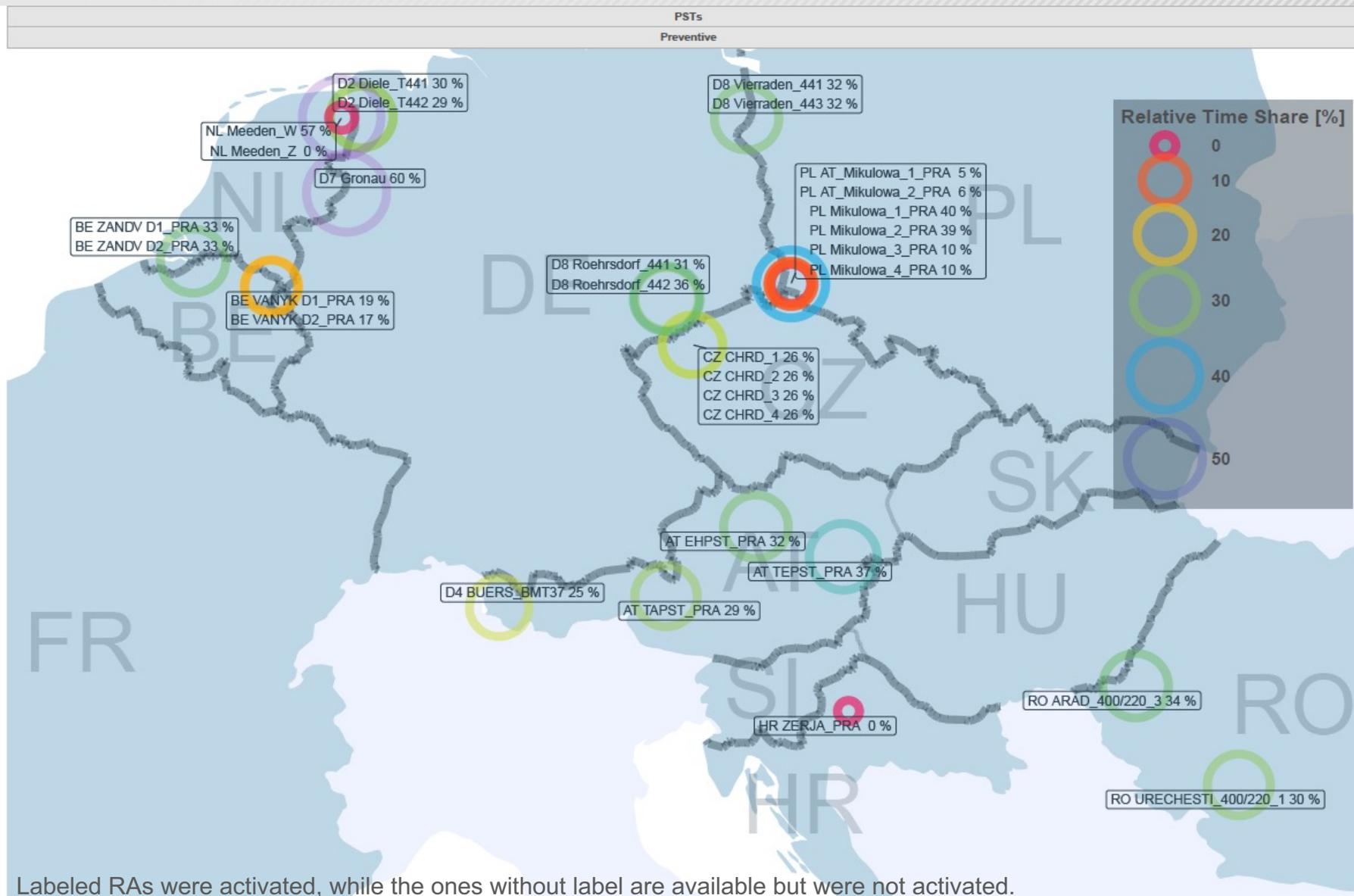


* Number of occurrence of RAs applied relative to time stamps with NRAO results

2. Core FB Day Ahead Capacity Calculation & Market Coupling



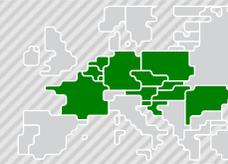
NRAO results interpretation: Relative Time Share of Applied PSTs in Preventive Mode



Labeled RAs were activated, while the ones without label are available but were not activated.

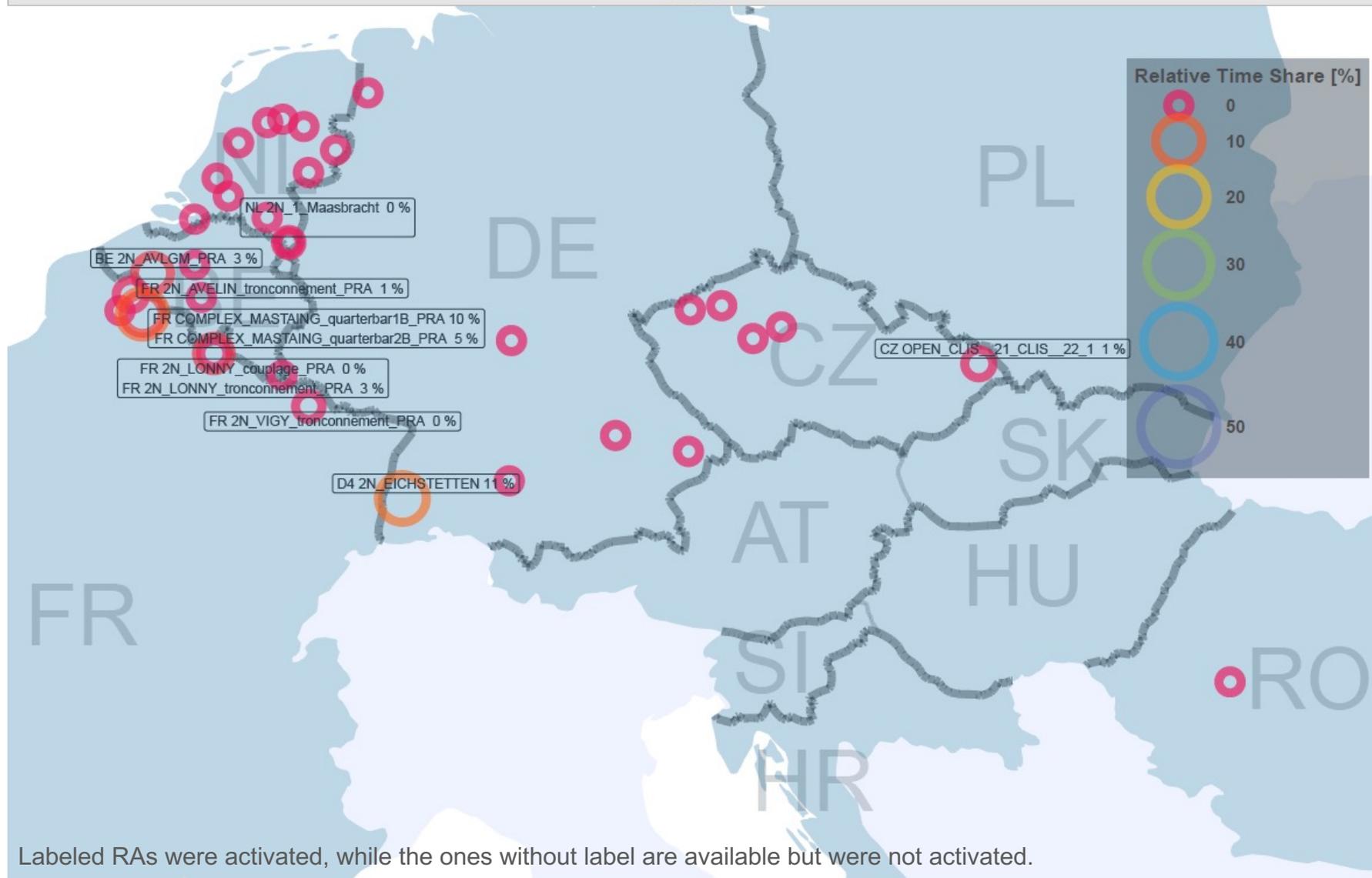
Relative share of 0% indicates there were RAs activated but the share is lower than 0.5%

2. Core FB Day Ahead Capacity Calculation & Market Coupling



NRAO results interpretation: Relative Time Share of Applied Topological RAs in Preventive Mode

Topological RAs
Preventive

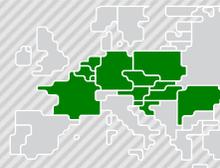


Labeled RAs were activated, while the ones without label are available but were not activated.

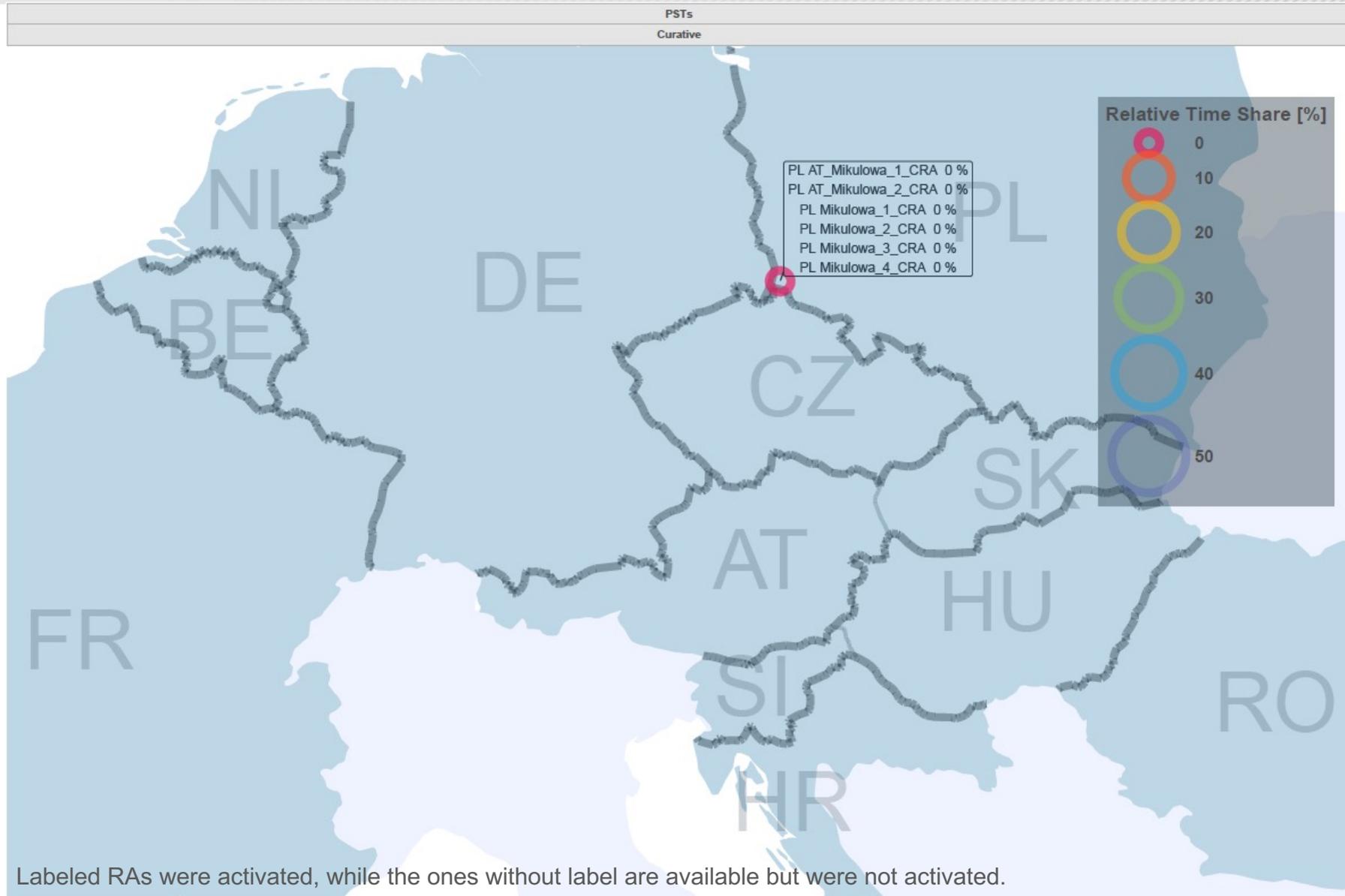
Relative share of 0% indicates there were RAs activated but the share is lower than 0.5%

2. Core FB Day Ahead Capacity Calculation & Market Coupling

TSCNET



NRAO results interpretation: Relative Time Share of Applied PSTs in Curative Mode



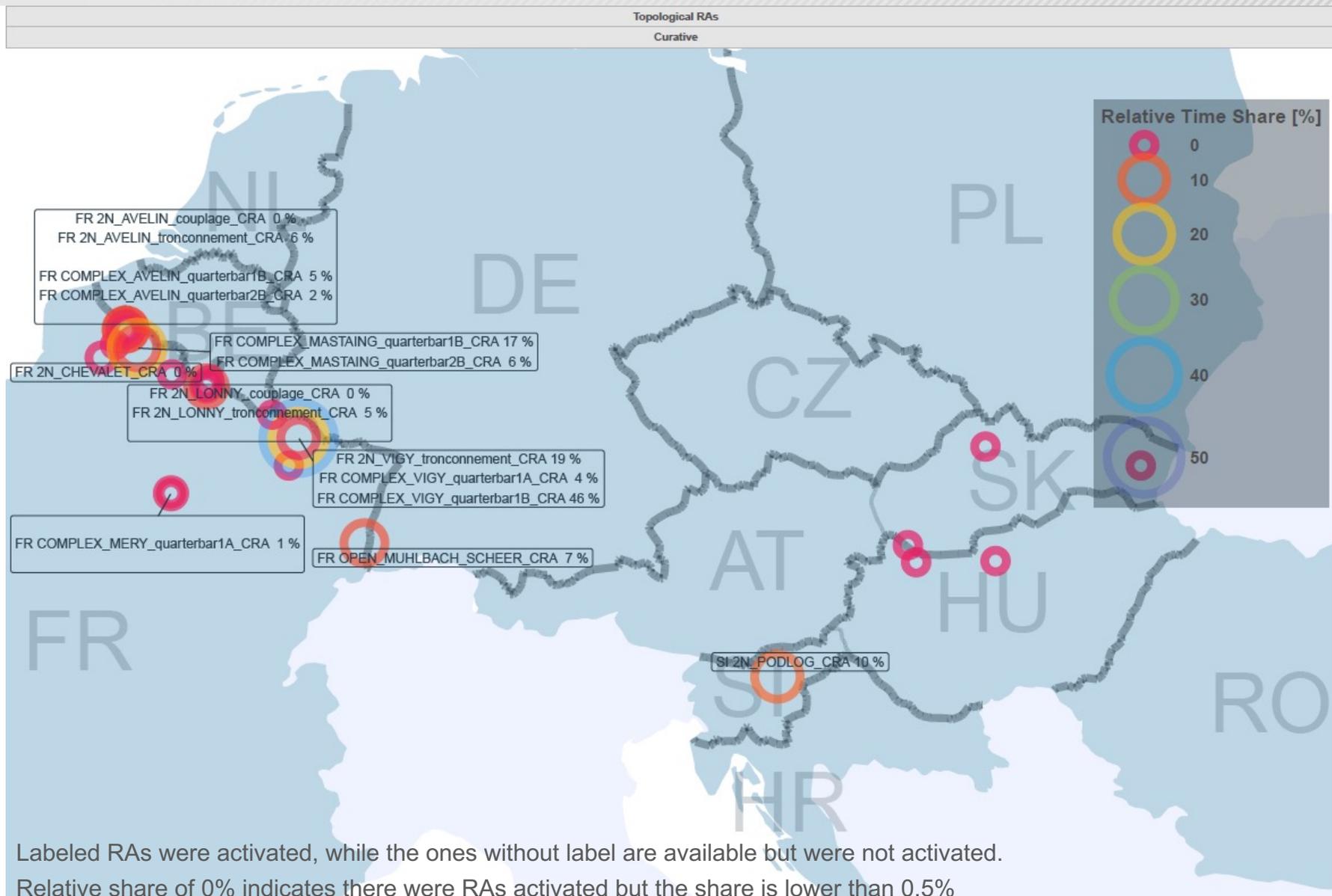
Labeled RAs were activated, while the ones without label are available but were not activated.

Relative share of 0% indicates there were RAs activated but the share is lower than 0.5%

2. Core FB Day Ahead Capacity Calculation & Market Coupling



NRAO results interpretation: Relative Time Share of Applied Topological RAs in Curative Mode



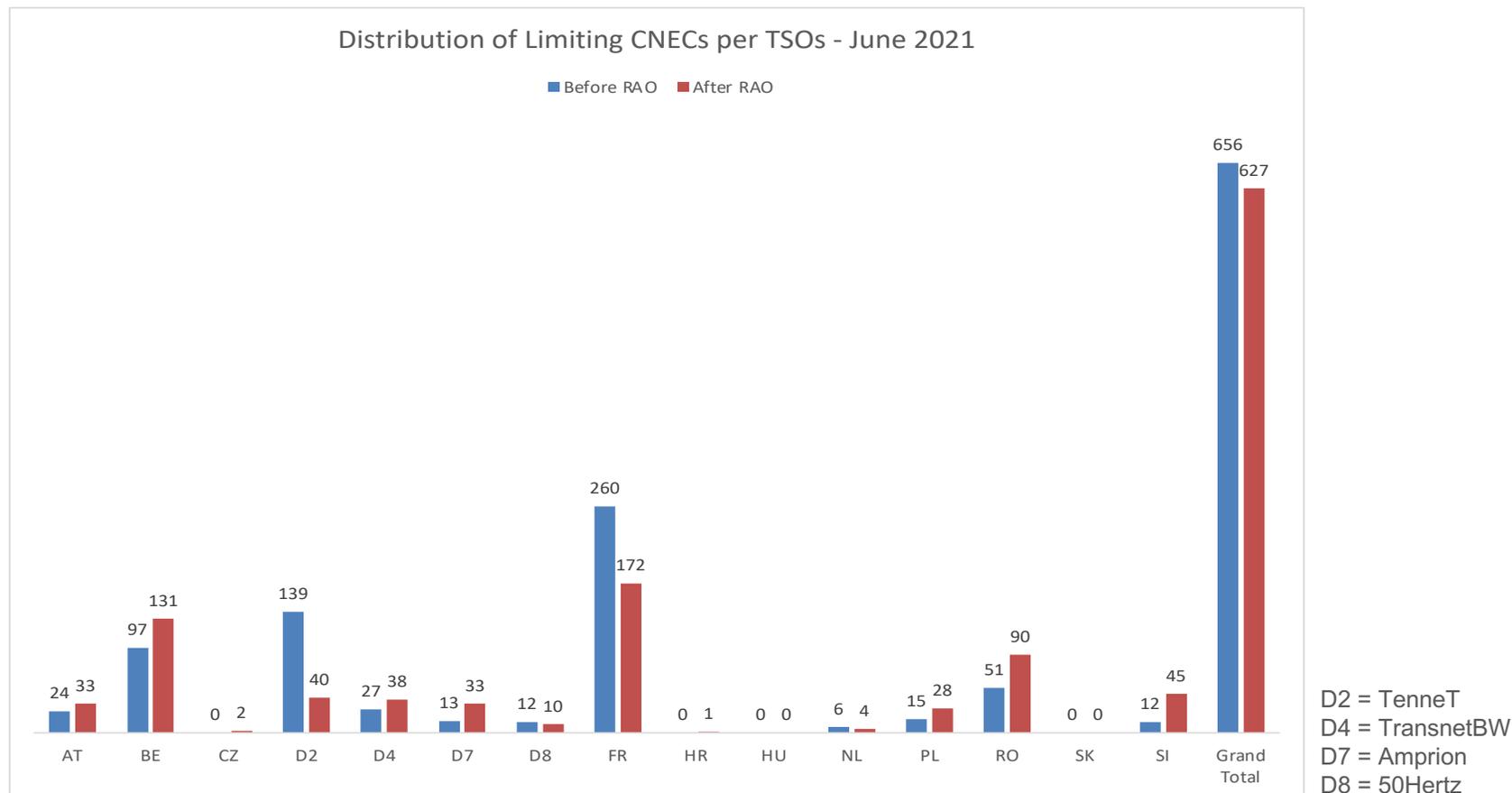
Note: No GPS coordinates for 'TOP_OPEN_Chooz_Monceau_225_CRA', applied during 3% of the time.

2. Core FB Day Ahead Capacity Calculation & Market Coupling



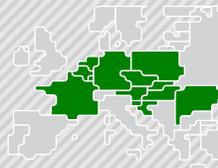
NRAO results interpretation: Most limiting CNEC per TSO – June 2021

The graph below shows the distribution of CNECs which are the most limiting from NRAO perspective, these are the CNECs with lowest relative RAM per MTUs.



As expected, there was redistributing of the most limiting CNECs. This is because the application of Remedial Actions does not eliminate flows but re-routes them, reducing the flows on some limiting CNECs and increasing the load on others, which also impacted the RAM values.

2. Core FB Day Ahead Capacity Calculation & Market Coupling



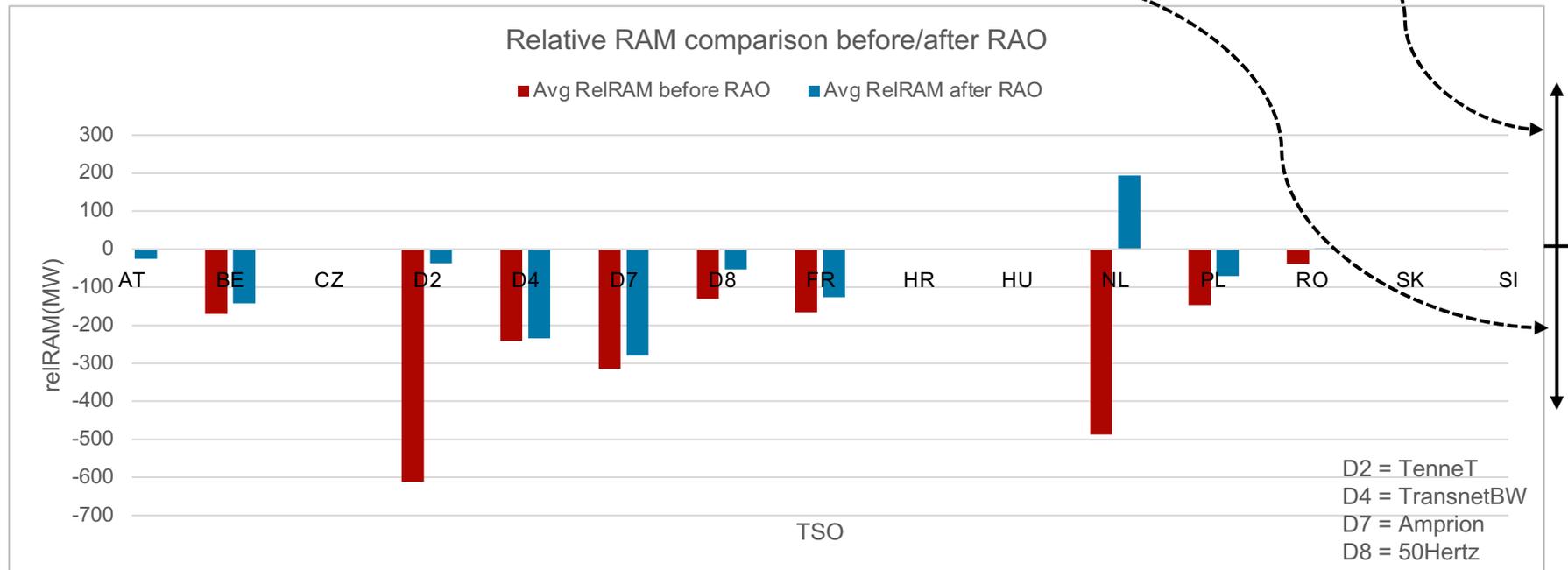
NRAO results interpretation: Average variation of relative RAM before and after RAO – June 2021

The graph shows average values of relative RAM before and after NRAO, per TSO on the most limiting CNECs from NRAO perspective. Selected CNECs before RAO are the same as after RAO, and average computed for MTUs when NRAO was used further in the process.

- Most limiting element from NRAO perspective is the one which has the lowest relRAM per MTU.
- To determine value of relative RAM, the following formula was used:

$$RAM_{rel} = \frac{RAM_{nrao}}{\sum_{(A,B) \in \text{neighbouring Core bidding zones pairs}} |PTDF_{A \rightarrow B, nrao}|} \text{ if } RAM_{nrao} \geq 0$$

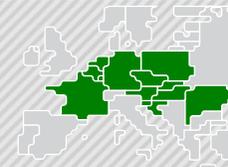
$$RAM_{rel} = RAM_{nrao} \text{ if } RAM_{nrao} < 0$$



- The increment of relRAM values after RAO shows that the optimization performed did increase the capacity on some areas.
- In case of NL, it is obvious that RAM before RAO was negative and therefore relRAM= negativeRAM. After application of RAs, the flow on the element decreased leading to an increased RAM (equal or above 0), and this results in relRAM no longer being absolute (RAM) but proper calculated relative value.
- In case of SK, HR, HU and CZ no most limiting elements from NRAO perspective were encountered.

2. Core FB Day Ahead Capacity Calculation & Market Coupling

G.MEUTGEERT



Static Grid Model

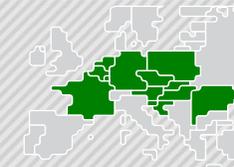
Concept of the Core Static Grid Model was discussed on CCG in April

- Principles based on:
 - Requirements of the Core CCM (Article 25),
 - the current practice in the CWE DA FB,
 - and results of the Core survey from February 2021.

Status of Core TSO preparation for publication of the first Core SGM

- TSOs are now finalizing their preparation of the Static Grid Model
- Publication is expected in the end of November
 - SGM will be published on JAO website (in the Core FBMC section)
 - Excels with TSOs data
 - SGM Handbook with explanation of the data published
 - Dedicated Market Message will follow
- To ease preparation for Market Participants
 - The template of the Core Static Grid Model is available in the enclosed files:
 - Core _Static Grid Model_template_template_CCG.xlsx
 - The first version of the SGM Handbook with explanation of the scope of data published can be found in the enclosed files:
 - Static Grid Model Handbook_CCG.docx

2. Core FB Day Ahead Capacity Calculation & Market Coupling



Publication tool: status

The publication tool has been active as of December 2020, ever since, there have been numerous updates and improvements made to the tool to ensure quality publication.

Pre-coupling (developed)

The table contains the complete list of publications supported by the tool:

	Pre-coupling
1	Core Market View
2	Core Market Graphs
3	Core Map
4	D2CF
5	Refprog
6	Reference Net Position
7	Intial Comp. (Virgin Domain)
8	Remedial Actions Preventive
9	Remedial Actions Curative
10	Validation Reductions
11	Pre-final computation
12	LTN
13	Final computation
14	Max net Pos
15	Max exchanges (MaxBex)
16	Allocation Constraints
17	Final Bilateral Exchange restrictions
18	ATC
19	LTA
20	Shadow Auction ATC
21	Spanning DFP

Post-coupling (development in progress)

The table contains the post-coupling pages that are supported by the tool:

	Post-coupling
1	Allocated capacities
2	Net Position
3	Total Congestion Income <ul style="list-style-type: none">•Total Gross Congestion Income of the Core region•Congestion Income per Core TSO and per hub
4	Intraday ATC
5	Price Spread

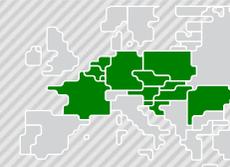
Monitoring tool (development in progress)

The monitoring tool will be developed to:

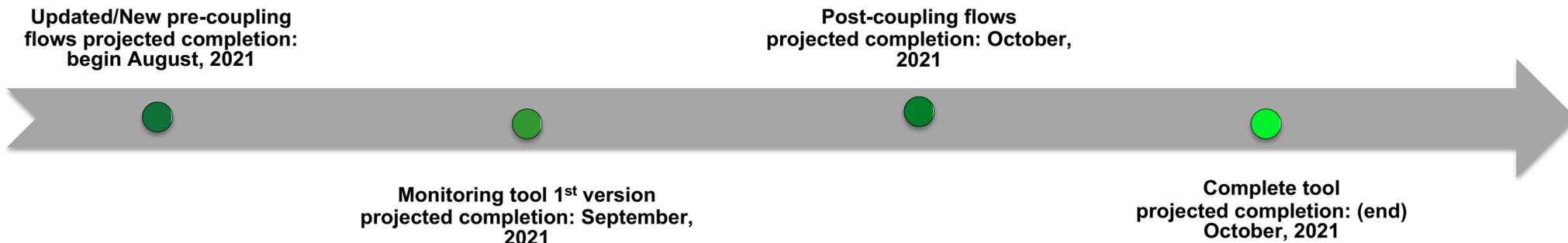
- Automatically check which (defined) input file(s) are unavailable in publication tool on daily basis after publication deadline has passed.
- Send automatic notification/alert when files are not received (past a defined publication deadline) to JAO Operations team who will then take the necessary actions to complete the gap.
- Generate reports; the tool will be able to generate report (PDF/Excel) which contains a list of BDs and files which were

2. Core FB Day Ahead Capacity Calculation & Market Coupling

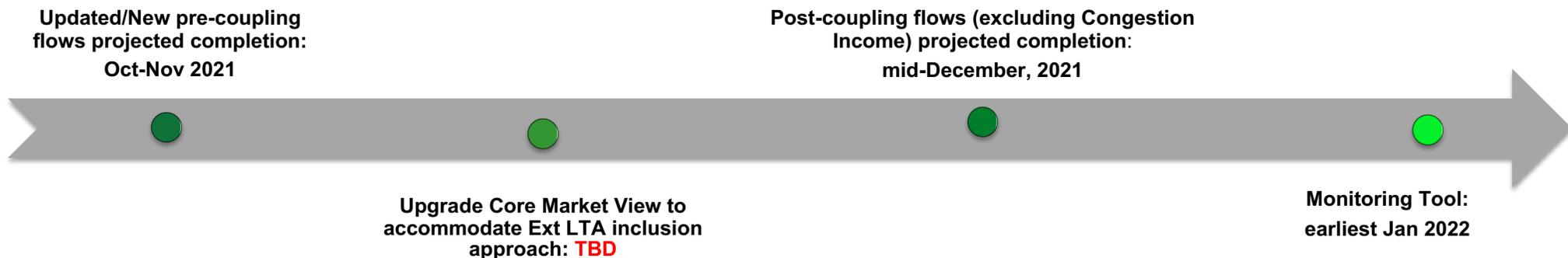
S. RAHMAN



Projected timeline: communicated Core CG July

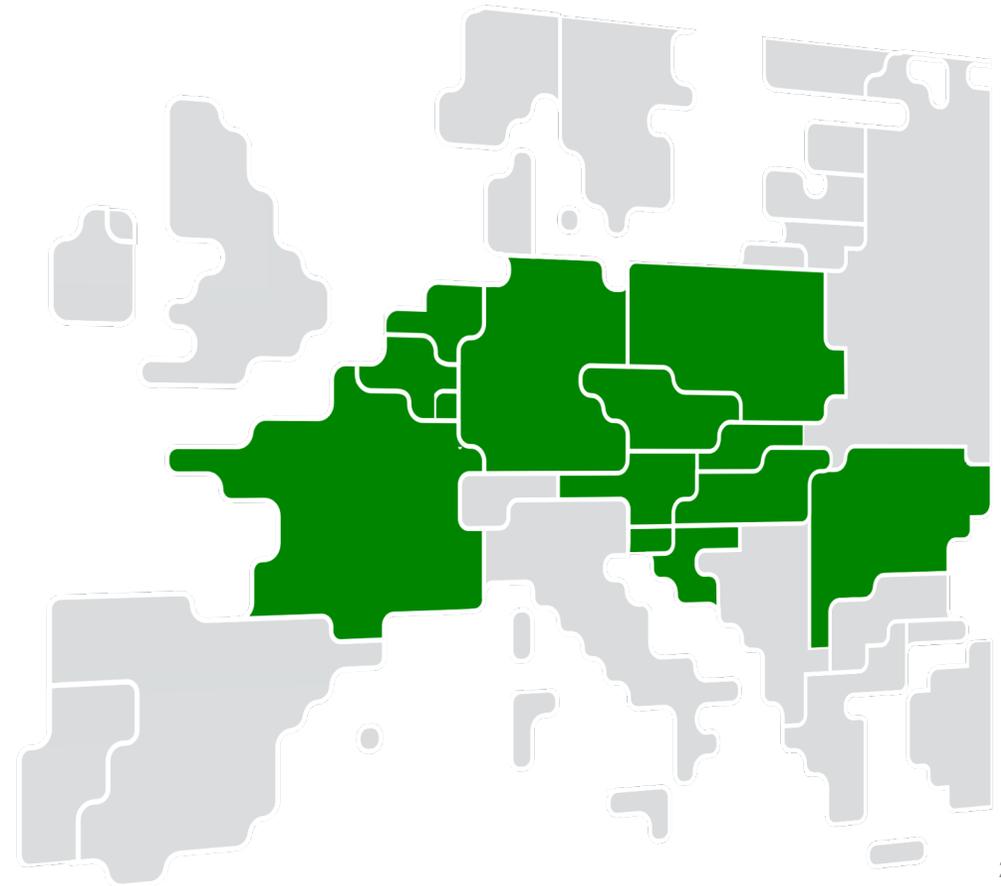


Projected timeline: update

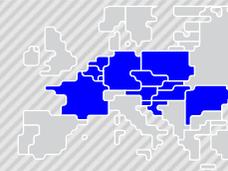




Question and Answers Session

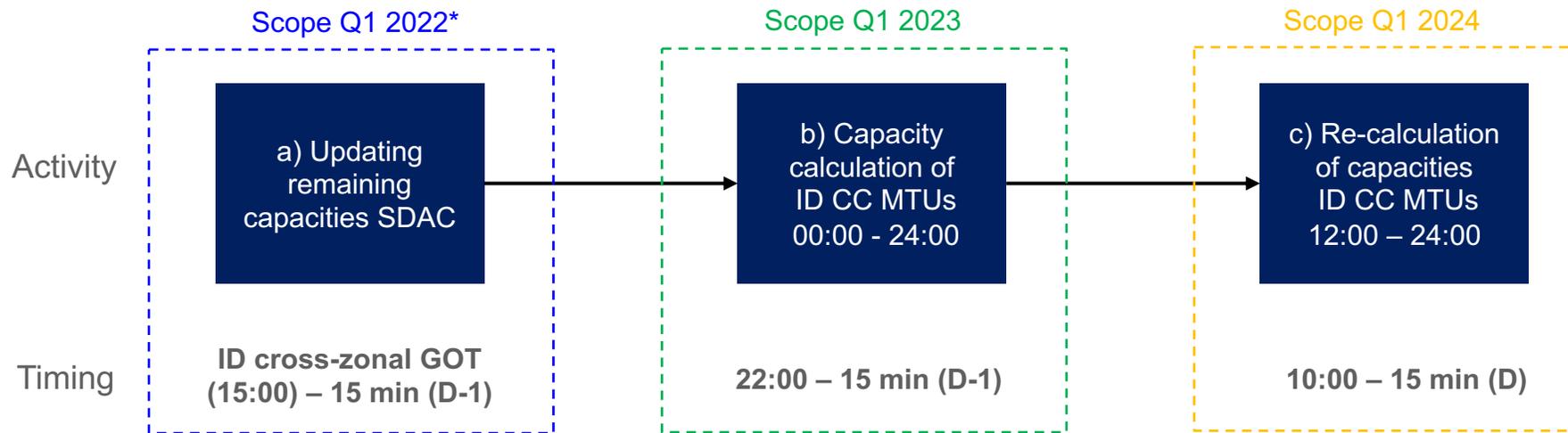


3. Intraday Capacity Calculation



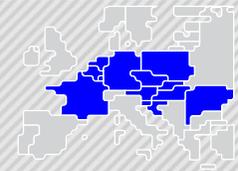
Reminder of Core Intraday CC methodology implementations

According to Article 4(2) of the Core Intraday CCM, Core TSOs shall implement the capacity calculation processes as follows:



* Between DA CCM implementation (Q1 2022) and 6 months after ID CCM at 22:00, TSO may set capacities to zero

3. Intraday Capacity Calculation



Project status (2/2) – Parallel run phases

Internal parallel run is divided into four phases

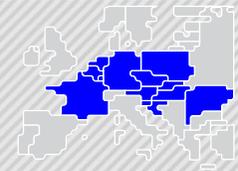


Objective	Ensure correct input data	Execute IDCC process chain	Reach representative results	Perform process with operators
Expected Duration	3 weeks	2 months	3 months	3 months

Timeline internal parallel run phases



3. Intraday Capacity Calculation



CCM amendments – principles and background

TSOs are working on two amendments of the Intraday methodology with the following improvements:

1st ID CCM amendment

Scope

- ID ATC extraction with Extended LTA Inclusion for DA Go-Live

To facilitate correct ID ATC extraction at DA Go-Live including Extended LTA inclusion

- The adopted Extended LTA inclusion approach (ELI) in DA was not yet described in the ID CCM.
- The update is needed to facilitate ID ATC extraction to update capacities at 15:00 D-1 IDCZGOT

2nd ID CCM amendment

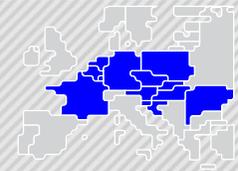
Scope

- ROSC aligned business process
- Minor updates, consistency

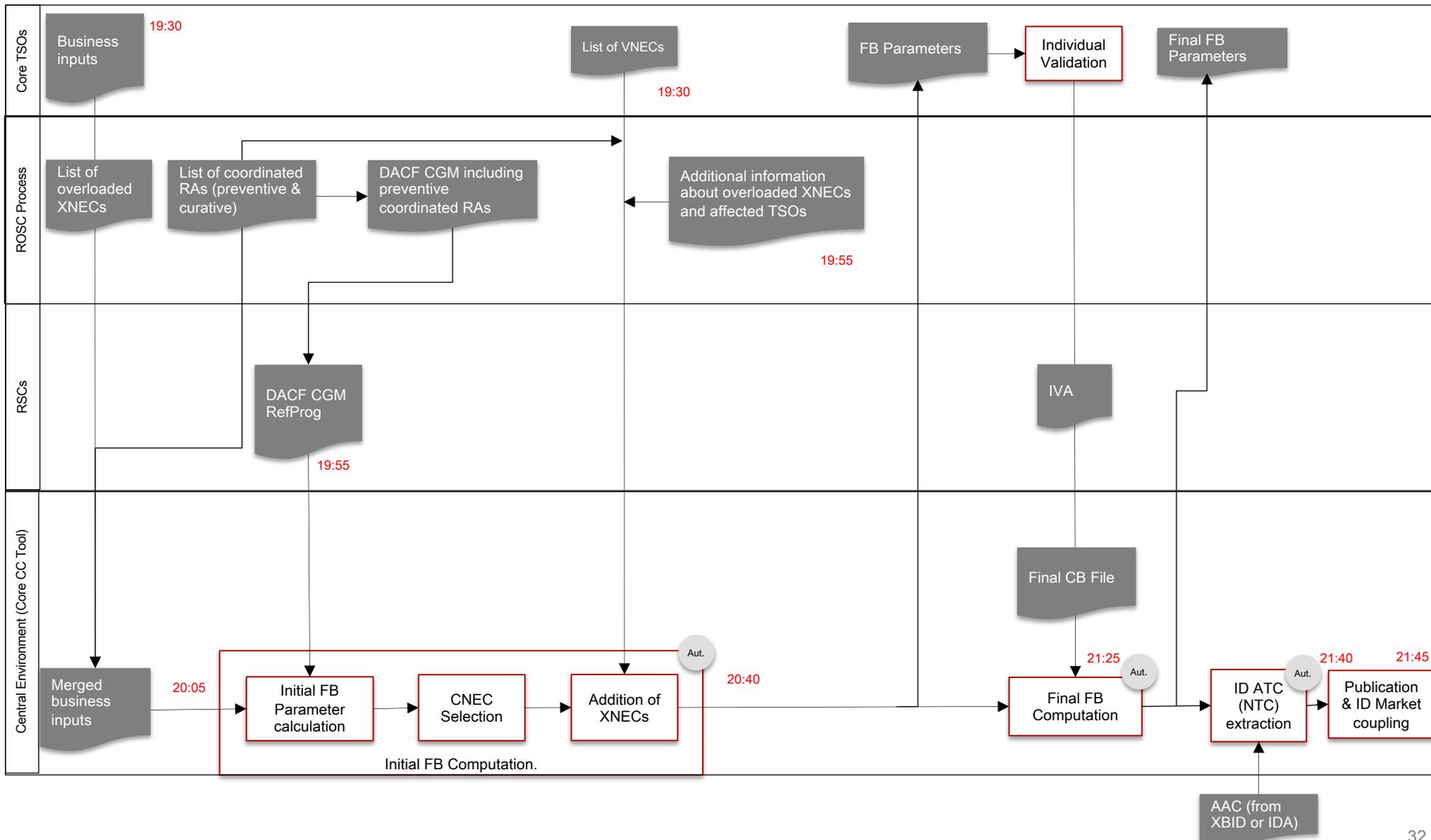
Core TSOs update the ID process to ensure a better alignment with the ROSC process

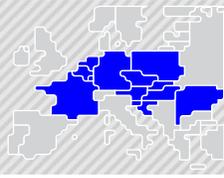
- Update establishes consistent use of remedial actions between the CROSA and IDCC process, which will ensure remedial actions applied in CROSA (at that point in time) remain effective after providing intraday capacity.
- Considering remedial actions to solve congestions, in order to calculate capacity on a grid model which is as much as possible congestion-free.
- Solving performance issues caused by the parallel operational timings of ROSC and IDCC processes by skipping the NRAO step.

3. Intraday Capacity Calculation

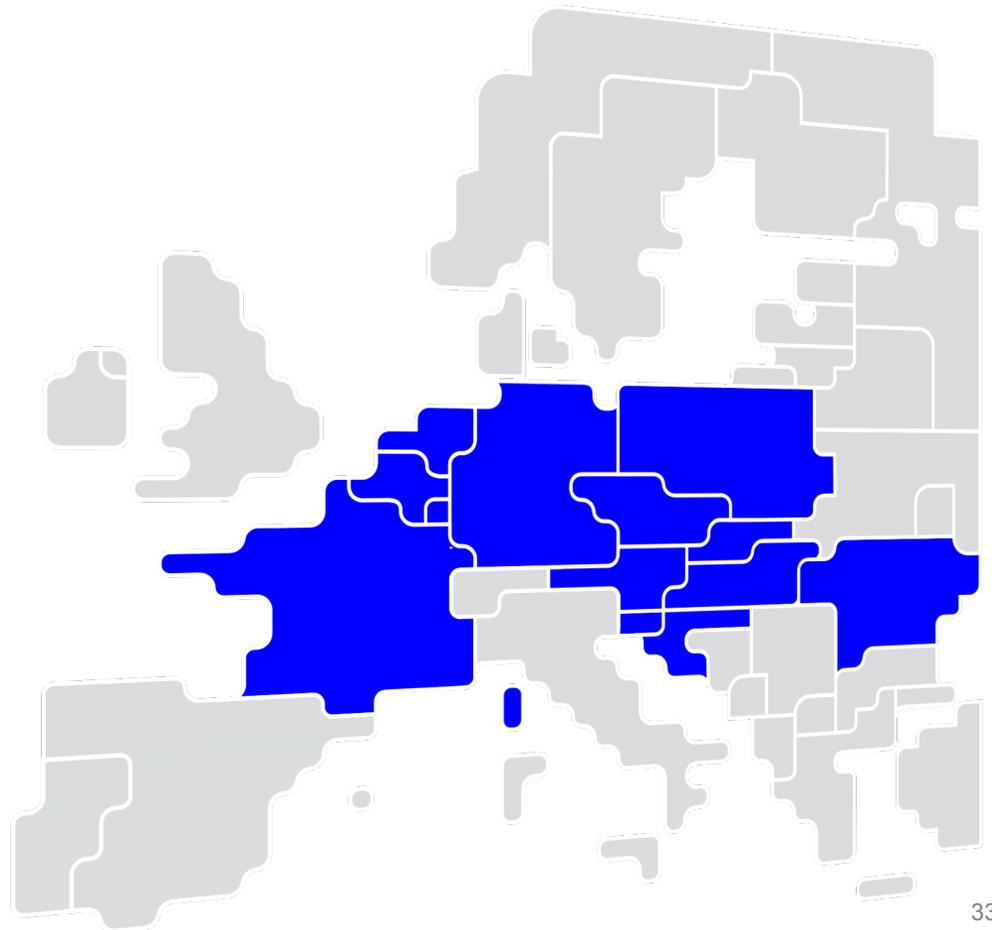


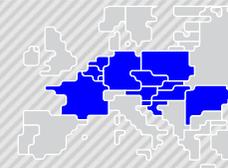
Target High-Level Business Process (with ROSC v1)





Question and Answers Session



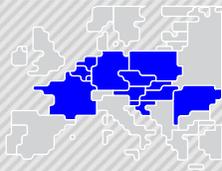


Reminder of the context, presented in Core CG 22/04/2021.

- The ROSC, RD&CT and RD&CT CS methodologies have been defined, by ACER decisions.
- The goal is to provide a level playing field for Remedial Actions through a coordinated approach in Core CCR.
- Core CCR has defined a realistic implementation plan which sets two Go-live moments:
 - 2024: ROSC V1 + CS
 - 2025: ROSC V2
- Inter-compatibility of ROSC processes with existing and future operational processes (e.g. IDCC, inter-CCR coordination) can be challenging but solutions are being designed.

The objectives respected by the realistic roadmap are:

- Implement into operational tooling and process the ROSC and CS methodologies as defined by ACER decisions.
 - **Gain:** Compliancy with rules set in ACER methodology
- Implement robust and reliable solutions in operations in the shortest possible timeframe
 - **Gains:** Confidence in operational processes, limit the risk of operational issues which can severely affect grid security; Still implement the ROSC process as fast as possible to get more flexibility for TSOs in guaranteeing the grid security
- Develop a ROSC V1 which is the minimum viable product of ROSC V2
 - **Gains:** Modules from ROSC V1 are re-usable and improved in the ROSC V2, cost-sharing developed for ROSC V1 is then compatible with V2, limit the total duration for testing and limit the total implementation time (no double development)



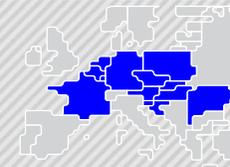
Core TSOs and RSCs are on track with the activities described in the ROSC & CS implementation plan: the requirements phase is completed, and the tendering phase has started

- High-level implementation roadmap → *See next slide*
- The requirements phase is the ground foundation of the implementation plan with activities on the critical path: the challenging deadlines have been met.
- During the requirements phases, now closed, Core TSOs and RSCs have:
 - Defined and approved the High-Level Business Process documentations for ROSC and CS. The HLBP's are subject to changes in the advancement of the implementation project.
 - Defined the business, functional and non-functional requirements for ROSC and CS tooling
 - Harmonized the requirements with IBWT and SWE CCR to allow for common tendering
 - Finalized the descriptions of the CorNet common IT architecture description
- The tendering phase is ongoing and on track
 - Contract Notice, part of the EU tender process, has been published on 08/10/2021
 - Request for Proposal has been sent to potential bidders on 29/11/2021
 - Tendering phase runs until June 2022

With the EU tender started, Core TSOs have more resource to progress on the dependent topics (IDCC, CGMES, etc.).

- High-level implementation roadmap → *See next slide*

4. Regional Operational Security Coordination



Integration of non-Superposable RAs (topological measures) in global optimization

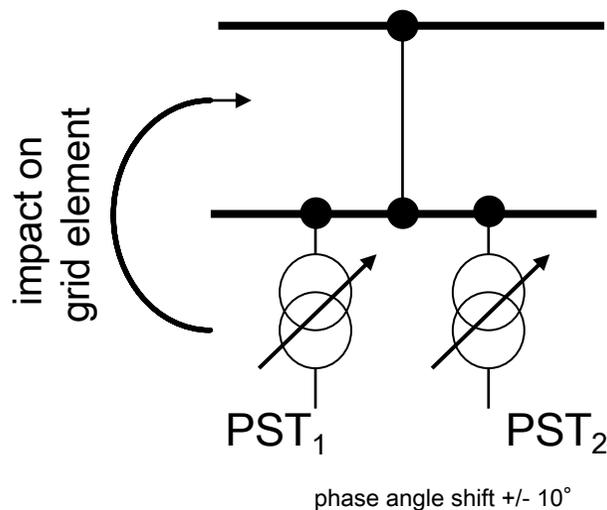
Background

- In the last Core CG meeting 22/04 the question was raised why topological RAs are to be considered as non-linear and for which the mathematical principle of superposition will not work (in contrast to other measures as Redispatching, PSTs or HVDCs)
 - Definition of a topological measure: change the topology of substations e.g. by switching couplers

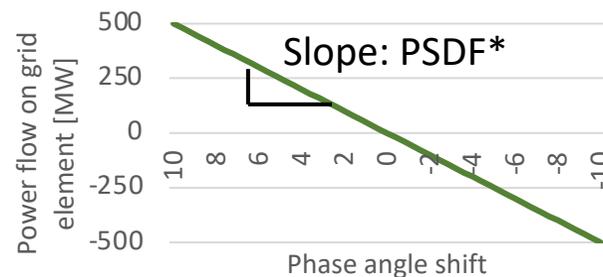
Linear RAs for which principle of superposition can be applied

- RAs have a approximately **linear impact** on congestions
- RAs can be considered approximately **independent of other RAs**

Example Phase Shifting Transformer (PST) and topological RA



Linear condition fulfilled



Condition of independency fulfilled

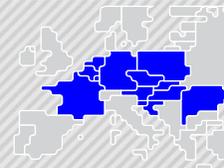
Impact of PST₂ can be superposed

Flow on grid element =

$$\text{PSDF}_1 \cdot \text{PhaseAngleShift}_1 + \text{PSDF}_2 \cdot \text{PhaseAngleShift}_2 (+ \text{RefFlow})$$

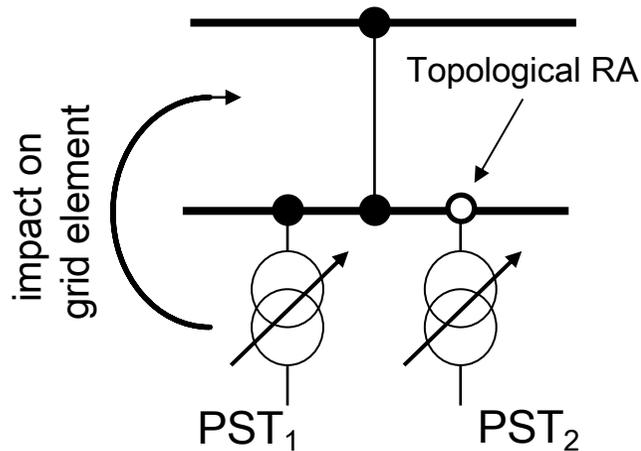
* PSDF: Phase shifting distribution factor

4. Regional Operational Security Coordination



Integration of non-Superposable RAs (topological measures) in global optimization

Activation of a topological RA



Independent condition violated

Impact of topological RA (IA_{Top}) **cannot** be superposed, because grid topology changes and PST_2 is decoupled in this example.

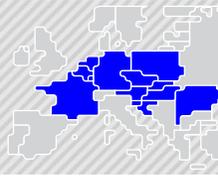
Flow on grid element \neq

$$PSDF_1 \cdot PhaseAngleShift_1 + PSDF_2 \cdot PhaseAngleShift_2 + IA_{Top} + RefFlow$$

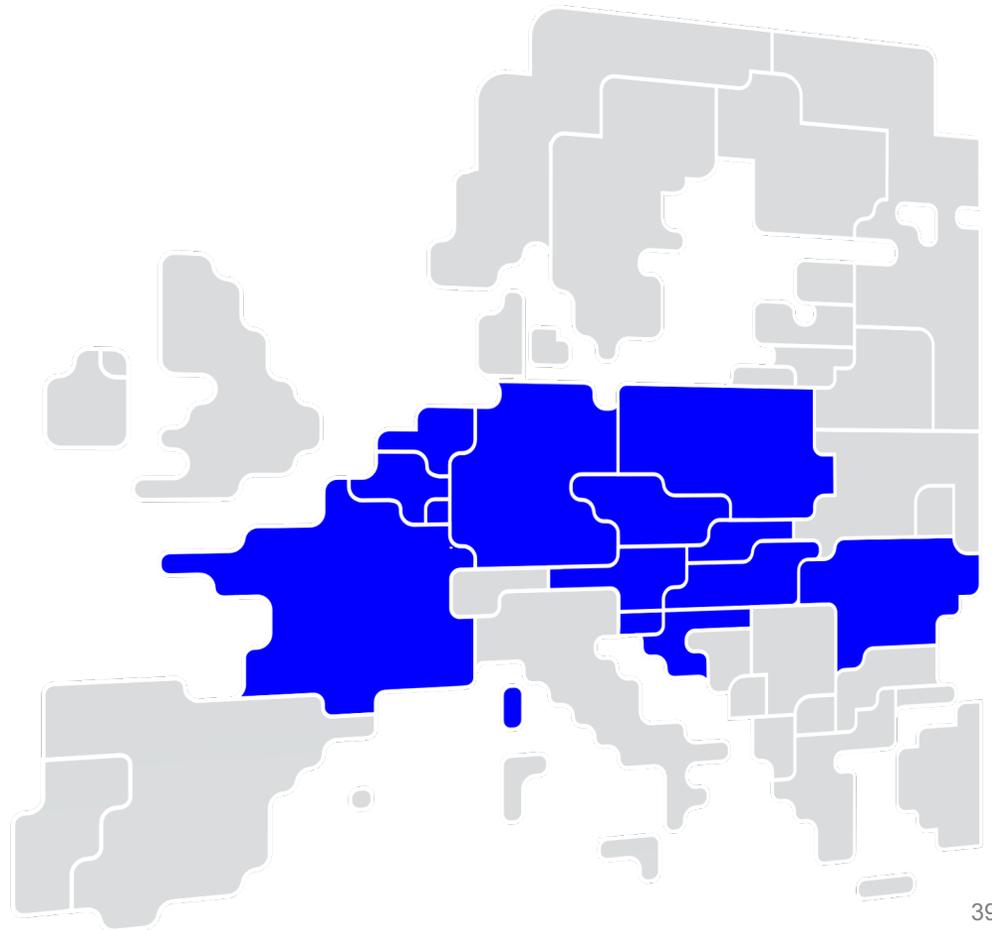
Generally, topological RAs do not allow to be considered as superposable as the grid topology will be significantly changed with these measures

- This causes a change in the PSDF (or PTDF for Redispatching) which requires a recomputation of the loadflow
- Exclusively linear optimization not possible with considering topological RAs, which increases complexity of optimization process significantly
 - Integration of topological RAs in the optimization still subject to investigations
- Integration of non-linear RAs in the global optimization planned only from ROSC V2 onwards, in ROSC V1 determination of topological RAs locally at TSO side

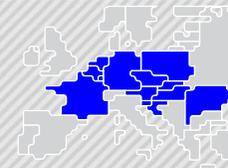
* PSDF: Phase shifting distribution factor
PTDF: Power transfer distribution factor



Question and Answers Session



5. Long Term Capacity Calculation



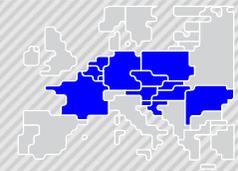
Methodology approved by ACER: what are the main changes?

ACER took a decision the 03rd of November 2021 on a long-term capacity calculation methodology, which considers a scenario based approach for computing Flow Based parameters, to be delivered to the Single Allocation Platform for Explicit Allocation

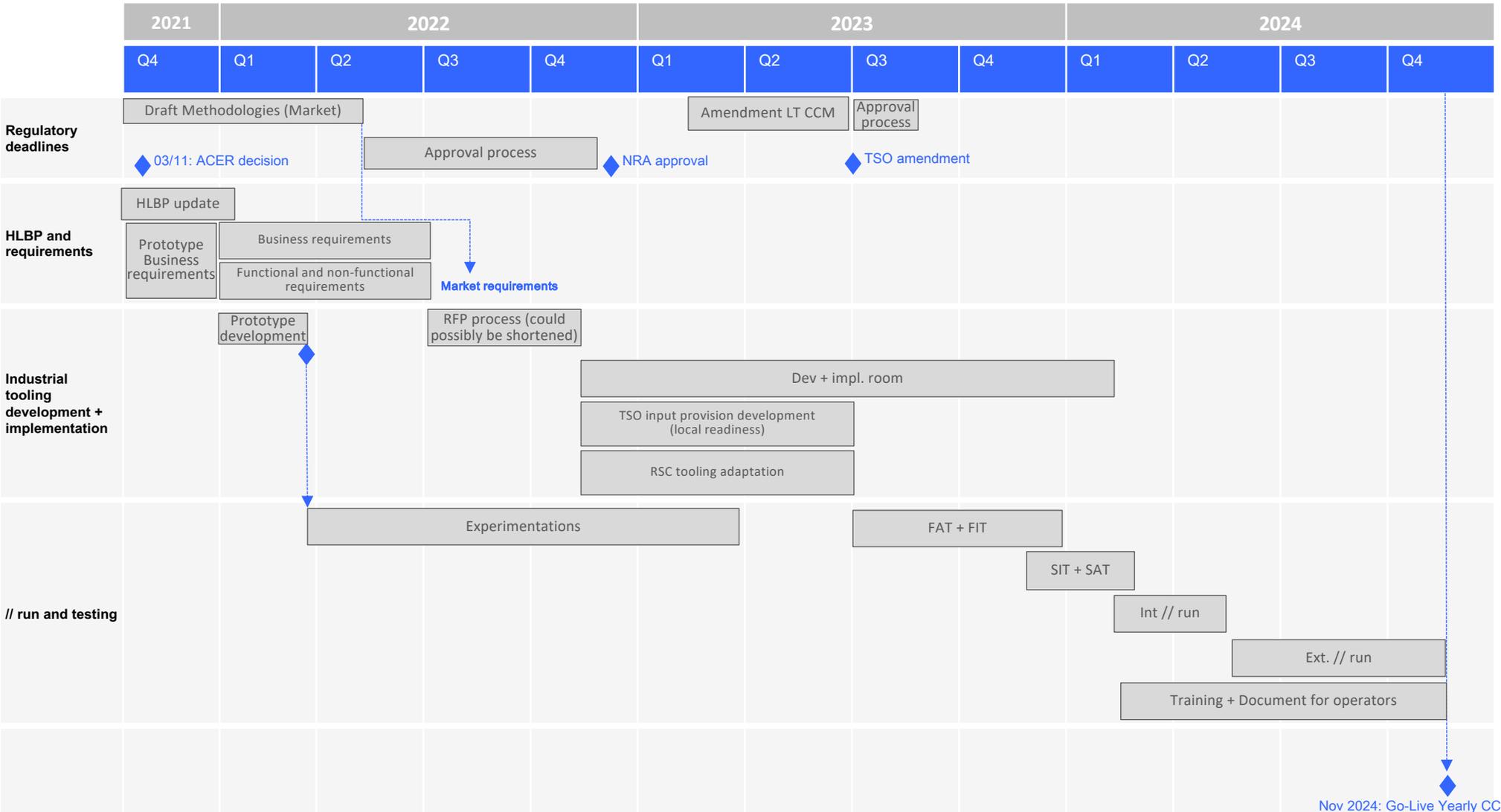
The main changes compared to the submitted methodology are the following:

- Value of Flow Reliability Margin: latest available values from the DA time frame, 10% for new CNEs
- Fmax: to be computed via an AC Load flow
- Remedial Actions: Non consideration during the computation
- Remaining Available Margin (RAM)
 - Fref to be computed via AC Load Flow
 - Already Allocated Capacity will be considered for the Monthly RAM computation
 - Level of MinRAM is 20% for Yearly, 10% for Monthly. It can be reassessed by TSOs, with an upper limit about 40% on Yearly and 20% on Monthly
- Methodology to be reviewed by Core TSOs within 18 months after Go Live
- Implementation within 3 years starting from 03rd of November 2021, so Yearly 2025 allocations to be done in compliance with this methodology
- External parallel run of 6 months, with involvement of SAP and market participants to test the effect of the methodology and adapt all the needed processes.

5. Long Term Capacity Calculation



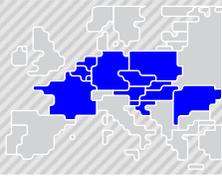
Core LTCC implementation Roadmap



5. Long Term Capacity Calculation

Presentation EFET and EURELECTRIC

EFET_EURELECTRIC



See next slides



Market participants concerns with the ACER Decision 14/2021 on the Core LT CCM

EFET and Eurelectric oppose ACER decision on Core LT CCM

ACER Decision 14/2021 on the Core LT CCM leave us startled:

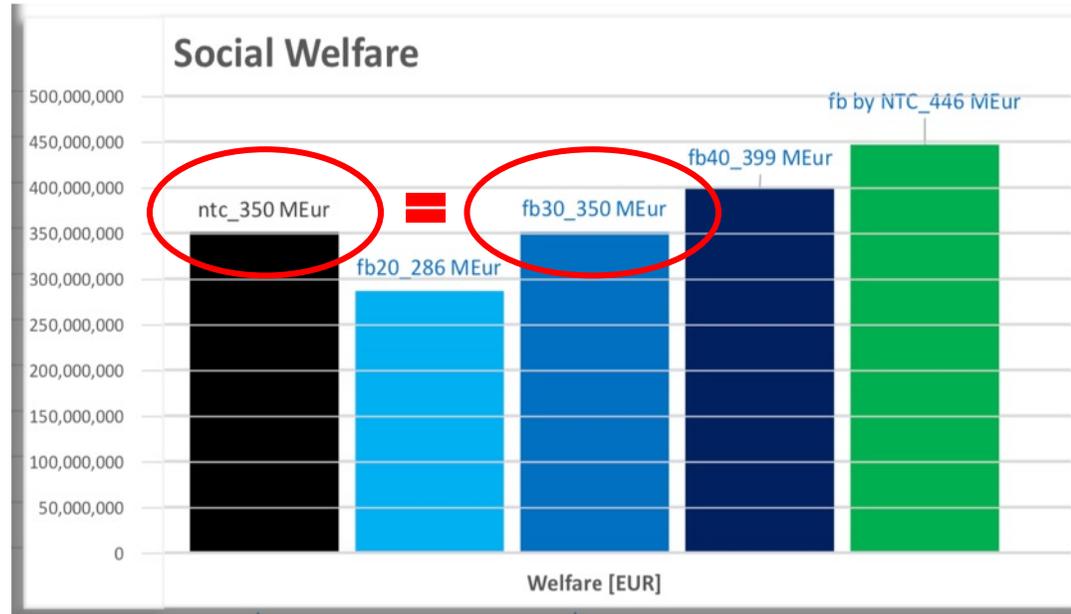
- Suboptimal decision process
- Benefits of flow-based not guaranteed
- Important operational and market impacts

Suboptimal decision process with poor stakeholder engagement

- A two-year long process to discuss a sensitive topic...
 - Since the first draft methodology, more than 2 years have elapsed
 - TSOs and NRAs discussed in depth various options, without market involvement
- ...Culminating in a rushed decision
 - A public consultation on the flow-based approach came up only this summer, without details, only covering concepts
 - A study on the benefits of flow-based on which the decision is based was performed quickly and without market participant input. It is not public

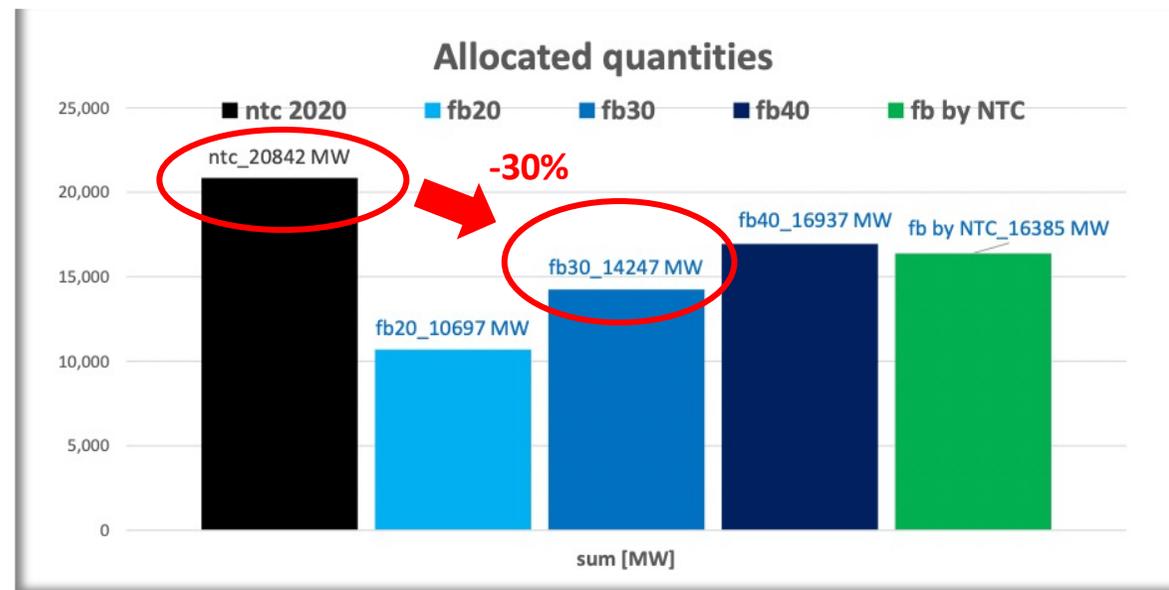
Benefits of flow-based are not guaranteed

- FCA Guideline requires evidence of the added value of flow-based
 - cNTC methodology is the default methodology – using FB should be justified
 - ACER study takes narrow view that “social welfare” = auction revenues
 - Even with this narrow view, study shows similar “social welfare” of the approved FB methodology with min-RAM 30% compared to current NTC
 - No assessment of cNTC



Impact of lower allocated capacities is ignored

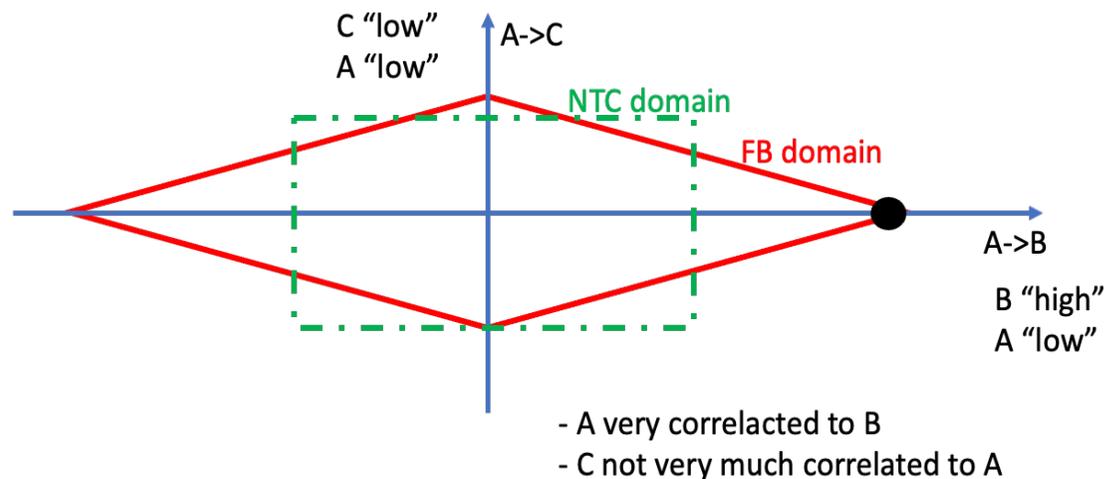
- Use of flow-based in forward decreases allocated capacities
- Analysis of “social welfare” ignores the economic effect of lower allocated capacities
 - Does not correctly represent the added value of LTTRs in terms of hedging possibilities
 - Does not cover the cost to ensure a certain level of allocated capacities



Expected effects on the market

- What lower allocated capacities mean for the market:

- Capacity will be allocated in priority at borders with large spreads
- Low or zero allocated capacity at borders with small spreads



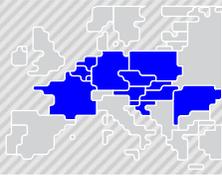
- As OPTIONS, FTRs are used by market participants to **hedge their exposure primarily to the volatility of the spreads**, rather than their nominal value
- This will increase the cost of hedging, but it is not assessed in the ACER Study

Market participants see no safeguards

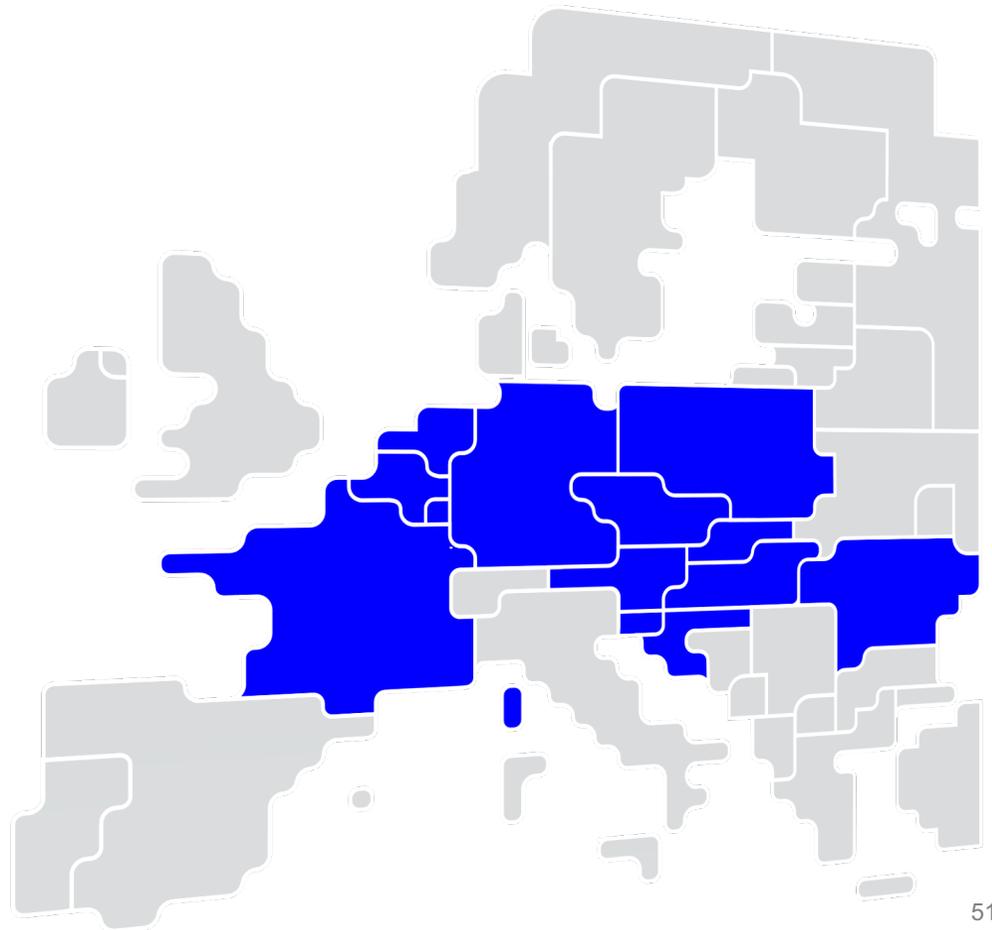
- 2019 NRAs commitment to guarantee “at least the same level of allocated capacities” is rendered void by ACER Decicion 14/2021
- No safeguard or guarantees that there will be enough stakeholder involvment and a smooth transition in the future
 - “Monitoring and performance” criteria not defined yet – will be dermined with NRAs (no stakeholder involvment foreseen in the methodology)
 - Will a parallel run also compute the allocated capacities?
 - Will minimum level of capacity be guaranteed at each border?

Next steps, EFET and Eurelectric requests

- Associations like EFET and Eurelectric cannot appeal ACER Decisions
- If the Decision stands, safeguards need to be applied in the allocation process to ensure a minimum level of capacity at all borders
 - The allocation process will be tackled via the EU HAR
 - We expect strong stakeholder involvement
- Stakeholders should also be consulted for the determination of indicators (monitoring and performance criteria)
- We call on ACER to publish its Study on the additionality of flow-based



Question and Answers Session



6. Information access dialogue



Status update

Reminder

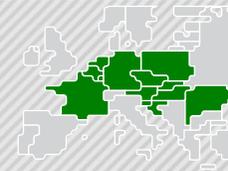
- During CCG 07/07/2021, Core TSOs introduced the start of a dialogue group to improve access to information in Core
- Scope of this group: define the right framework/structure for information access: how to facilitate/ease access to information for especially new entrants, but also for experienced system users?
- Volunteers: CCG Co-Chair, Danske Commodities, IFIEC, Österreichs Energie (and Austrian Energy Agency), TIWAG, EVN (Bulgaria)

Status

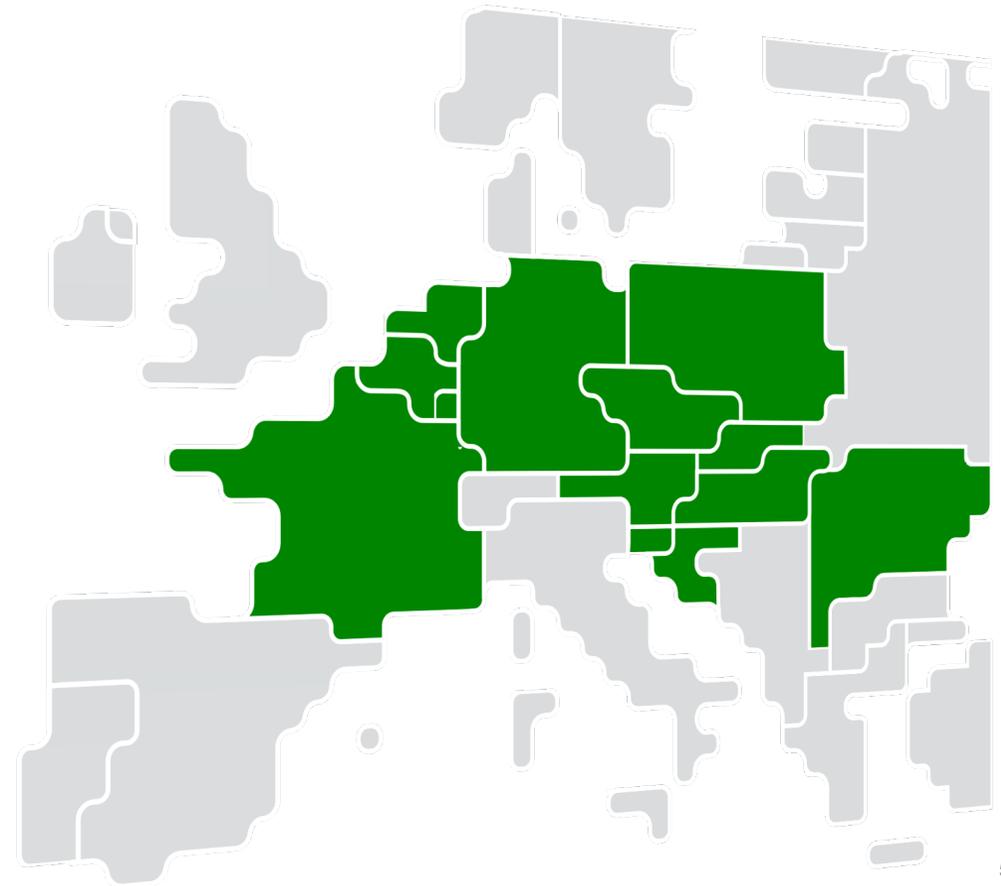
- 2 calls held
 - 21/09/2021 → Review of available information (JAO, ENTSO-E, PXs, ...)
 - 27/10/2021 → Further discussion on the scope and review and discussion on ideas for improvement of the publication tool by Austrian Energy Agency

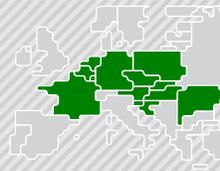
Next steps

- Dialogue group workshop session on the scope of information access → December
- Based on the outcome of the workshop: feasibility assessment (scope and implementation steps)



Question and Answers Session





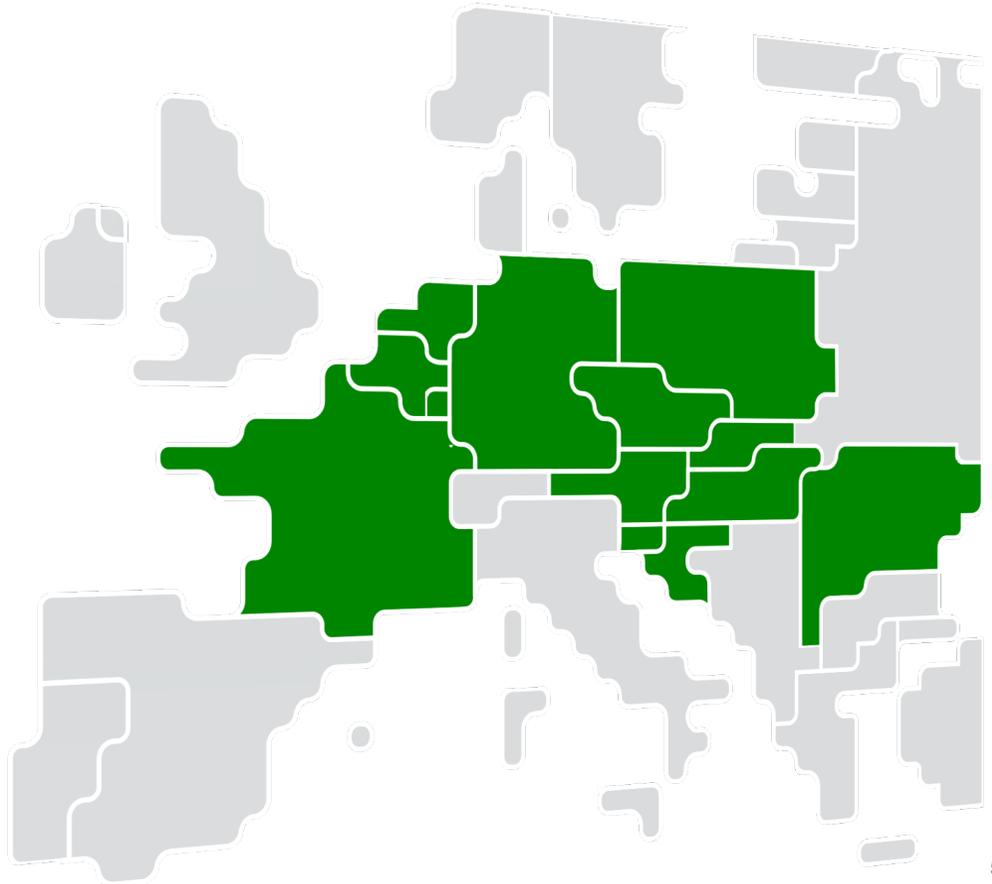
Existing Core communication channels

- **Core Consultative Group mailing list**
 - Register by sending an email to CoreCG@magnus.nl
- **Core section on ENTSO-E website** (e.g. upload of methodologies and reports on public consultations, current status of the Core CCR program, CG minutes, ...):
 - Link: https://www.entsoe.eu/network_codes/ccr-regions/#core
- **ENTSO-E newsletter** informs regularly about updates in the different CCRs (e.g. submitted methodologies, launch of public consultations, ...)
 - Subscription via <https://www.entsoe.eu/contact/>

Q&A forum on JAO website

- **Q&A forum on the JAO website** which gives space to Market Participants to ask questions about the External Parallel Run and other relevant topics:
 - Link: <http://coreforum.my-ems.net/>

Appendix

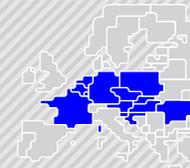




ACER	Agency for the Cooperation of Energy Regulators	IGM	Individual Grid Model
AHC	Advanced Hybrid Coupling	IVA	Individual Validation Adjustment
BZ	Bidding Zone	KPI	Key Performance Indicator
CACM	Capacity Allocation and Congestion Management	LF-SA	Load Flow Security Analysis
CC	Capacity Calculation	NRA	National Regulatory Authority
CCR	Capacity Calculation Region	NRAO	Non-costly Remedial Action Optimization
CGM	Common Grid Model	RA	Remedial Action
CGMES	Common Grid Model Exchange Standard	RAO	Remedial Action Optimizer
CNEC	Critical Network Element with a Contingency	RFI	Request for Information
CS	Cost Sharing	RFP	Request for Proposal
CSA	Coordinated Security Analysis	ROSC	Regional Operational Security Coordination
CSAM	Coordinated Security Analysis Methodology	RD&CT	Redispatching and Countertrading
CROSA	Coordinated Regional Operational Security Assessment	RSC	Regional System Operator
DA	Day-Ahead	TSO	Transmission System Operator
ENTSO-E Electricity	European Network of Transmission System Operators for Electricity	SHC	Simple Hybrid Coupling
FAT	Final Acceptance Test	SO GL	System Operation Guideline
FIT	Functional Integration Test	SAT	Site Acceptance Testing
FB	Flow Based	SIT	System Integration Testing
GSK	Generation Shift Key	V1/V2	Version 1/ Version 2
GLSK	Generation Load Shift Key	XNE	Cross-border element
IDCC	Intraday Capacity Calculation		

Appendix – Intraday Capacity Calculation

Interdependencies DA CROSA (ROSC) & IDCC



Overview and data exchange between Day-Ahead CROSA (v1) and IDCC

DA CROSA (ROSC V1)

IDCC (1st run)

Process step

