## **CORE - Publication Tool for DA CCM Publication Handbook**



Summary	The handbook contains an overview of the data that is published, along with the relevant information required to utilize the Publication tool.
Version	1.4
Date	Apr 2022

Version History	Change description
1.3	Version released Nov 2021 mainly focused on the pre-coupling pages
1.4	<ul> <li>Version released Apr 2022 integrating the post-coupling pages as well as following improvements/precisions to the pre-coupling pages: <ul> <li>UCT time in download</li> <li>Core market view: explanation how to model ALEGrO as part of DE-BE exchanges and hub positions</li> <li>Explanation data sources RefProg</li> <li>Updated references to cross-zonal capacities being the combination of final FB domain and final BEX restrictions</li> <li>Explanation on IVA capping and how it plays out in the pre-final and final FB domain</li> <li>Scope of network elements that can be found in the domain pages</li> <li>Caveat on the minRAM_target_Core parameter</li> </ul> </li> <li>Please note the introduction of the following functionalities is deferred to a next release</li> </ul>
	- Monitoring tool
	<ul> <li>Core market view: explanation on extended LTA inclusion approach added yet correct implementation to follow in a next release</li> </ul>



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## 1 Background

The Core Day-ahead Capacity Calculation Methodology CCM Article 25 – "Publication of data" describes the publication obligations that TSOs need to fulfil. This encompasses the set-up of a dedicated online communication platform, and a handbook (this document) to enable market participants to have a clear understanding of the different published data.

The dedicated online communication platform is named the Core Publication Tool and can be accessed via the following link: <a href="https://core-parallelrun-publicationtool.jao.eu/core">https://core-parallelrun-publicationtool.jao.eu/core</a>

## 2 Navigation

Various publications are structured in multiple pages and listed in the vertical navigation bar. The navigation bar is visible at all times allowing users to easily switch between the different available publications.

Also present in the vertical navigation bar are filters which allow users to:

- Filter for a specific (i) business day and if needed a specific (ii) MTU;
- Filter on specific (iii) hubs or (iv) borders

The filter functionality allows users to target their dataset of interest, and is beneficial in terms of performance.

DATE			(i)
•	2021-02	-10	►
HOU	R		
(ii) (	00:00 - 01	:00	•
HUB			(iii)
	All	1	<b>r</b>
BOR	DER		
(iv)	All	-	•
A Core	2		
Core	e MarketVie	w	
Core	e MarketGra	aphs	
Core	e Map		
Bord	ler Data Ov	erview	
Initia	al Comp.(Vir	ginDon	nain)
Pre-	Final (EarlyF	<sup>o</sup> ub)	
Fina	l Computati	ion	
LTN			
Rem	edial Action	n Prever	ntive
Rem	edial Action	n Curati	ve
ATC	5		
Max	Net Pos		
Max	Exchanges	(MaxBe	ex)
Shad	JowAuction	ATC	
Shad	JowPrices		
Spar	ning/DFP		
Valio	lation Redu	ctions	
Alloc	ated Capac	ities	
Net	Position		
Con	gestion Inco	ome	
Intra	iday ATC		
Price	2 Spread		
Intra	iday Implici	t Allocat	tion
D2C	F		
Refp	rog		
Refe	rence Net F	osition	

## **JAO Publication Tool**



## 3 Downloading data

Users are able to download data in two formats (CSV or XML) via the "Download" button on the right upper corner. Users may opt to download data covering a range of days or a single day. If preferred, further filtering option to download specific time period is also available.

A download option for the Border Data Overview page is not planned as it is an overview page.

The main date filter in the navigation bar allows users to select and display data for a given day. Displaying multiple days in the GUI is not foreseen due to large volume of data (especially for domain pages).

The download option allows users additional filter functionality, users have an option to:

- Download a larger dataset (>24 hours)
- Download a shorter dataset (<24 hours)</li>

Max Excha	anges	(MaxB	lex)																					[	Down	lload
Date	AT► BE	AT► CZ	AT►DE	AT► FR	AT► HR	AT► HU	AT► NL	AT► PL	AT► RO	AT► SI	AT► SK	BE►AT	BE►CZ	BE► DE	BE►FR	BE►HR	BE►HU	BE►NL	BE► PL	BE►RO	BE►SI	BE►SK	CZ►AT	CZ► BE	CZ►DE	CZ►FR
2021-01-19 00:00:00	100	1993		-	222	170	100	10.15	139	1998	-046	300	100	-89	27.0		345	-	384	56	340	394	558	-62	-	-
2021-01-19 01:00:00	1000	203			104		2818	313	1.02		**	-	-	18.1	-	***	-	-	-	-	-	-	-	1.00	1201	
2021-01-19 02:00:00	-	-	-	-	-	170	1014	-	101	2004		$\mathbf{e}\mathbf{r}$	-	-675	-	340	34	-00	204	-00	344	397	104	-	-	-
<b>2021-01-19</b> 03:00:00	100	204	-		100	202	301	284	1414	-	-	-	-	-	-	105	-	-	-	-	-	1014	-	478	-	-
<b>2021-01-19</b> 04:00:00	per l	1914	-	8.85	104	397	100	100	1110	2020	2062		424.6	-	803		80	**		100	1011	-				-
<b>2021-01-19</b> 05:00:00	100	-	-	-	-	175	-			nload			×	-	433	100		-00	399		1404	380	***	-	-454	-
2021-01-19 06:00:00	(e)(e)	1414	-04		100		200	30%	2021-0 TO DATE TIM	1-19 00:0	D				8.0%	-	-	-	1785		-	-	-		-	
2021-01-19 07:00:00	1.000	5054	-	**	-	125	-	-	2021-0	1-20 00:0	D		_	875	140	-		20	-	194	2019	340		-	-04	-
2021-01-19 08:00:00	1411	101		-	101	218	201	200	Downloa	id as:	XML	0	SV	-	1111	80	100	-	-	100	-	-		-	-	
<b>2021-01-19</b> 09:00:00	HOR		-04	-			-	-	18.55	-	440	-	-	-	1.00	30.9	2481		-			-	DB1	100	-	
2021-01-19 10:00:00	5.002	55.0	-	-	-	1715	-	-	101	2024	-		104	-8.35		258		3949	-	04	1000	3000		-	-04	-
2021-01-19 11:00:00	1.000	1404			pero.	300	39-8	3896	1446	1004	-0.44		202	-	-	-	1992	1000	-	5.825	-		1.00		-	-

Note: the UCT time convention applied in the downloads, and hence can differ from the value observed in the GUI which is based on CEST time

## 4 Filter functionality: Domain pages

In the Domain pages (Initial, Pre-Final and Final), users are able to filter within following fields:

- Pre-solved Check box allowing user to select true or false
- TSO picklist allowing user to select TSO(s)
- Hub from / Hub to picklist allowing user to select multiple hubs (from/to)
- CNE keyword based search
- Contingency keyword based search

The filter selection will not have an effect on the downloading of data, here all the results are downloaded depending on the selected time period.

SEARCH 🗸	
CNE_NAME	
TSO	Select
HUB FROM	Select 🗸
HUB TO	Select 🔹
PRESOLVED	
CONTINGENCY	
Search	TOTAL ROWS WITHOUT FILTER: 28754 TOTAL ROWS WITH FILTER: 28754 DISPLAYED ROWS: 100



Final C	omp	utation																													Download	
SEARCH V CNE, NAMI 150 54 HUB FROM 54 HUB FROM 54 HUB TRO 54 HUB T	est est folias eque folias equ	with-out ficture 2009 with-south ficture 2009 with ficture 2009																														
				Informat	tion on th	w ONE								Information on	the Con	tingen	ey .															î
Date	TSO	CNE_Name	EIC_Code	Direction	Hub From	Hub To	Substation From	Substation To	ElementType	FmaxType	TSO	Contingency Name	BranchName	EIC_Code	Hub From	Hub To	Substation From	Substation To	BementType	Presolved	RAM	Irmax	u	F_max	FRM	F_(ref,init)	F_nrao	Eyef	F0core	FOall	F_uaf	AMR
2021-09-28	APG	Aschach - Hausruck	14T-220-0-02038F	DIRECT	AT	AT	Aschach	Hausruck	Line	SEASONAL										×	265	985	220	384	30	0	0	154	89	91	-3	0
2021-09-28 00:00:00	APG	Aschach - Hausruck 2038	14T-220-0-02038F	DIRECT	AT	AT	Aschach	Hausruck	Line	SEASONAL	CEPS	Prestice - Etzenricht Etzenricht - Prestice 442	Prestice - Etzenricht	10T-CZ- DE-00004Q	cz	DE	Prestice	Etzenricht	Tieline	×	270	985	220	384	30	0	0	149	84	88	-3	0
											Ad	ditional branch #2:	Etzenricht - Prestice 442	10T-CZ- DE-00004Q	DE	CZ	Etzenricht	Prestice	Tieline													
2021-09-28 00:00:00	APG	Aschach - Hausruck 2038	14T-220-0-0203BF	DIRECT	AT	AT	Aschach	Hausruck	Line	SEASONAL	CEPS	Prestice - Kocin	Prestice - Kocin	27T-TLI-V432G	CZ	cz	Prestice	Kocin	Line	×	267	985	220	384	30	0	0	153	87	89	-2	0
2021-09-28	APG	Aschach - Hausruck 2020	14T-220-0-02038F	DIRECT	AT	AT	Aschach	Hausruck	Line	SEASONAL	CEPS	Dasny - Slavetice	Dasny - Slavetice	27T-TU-V433B	cz	cz	Dasny	Slavetice	Line	×	262	985	220	384	30	0	0	165	92	94	-2	0
2021-09-28 00:00:00	APG	Aschach - Hausruck 2038	14T-220-0-0203BF	DIRECT	AT	AT	Aschach	Hausruck	Line	SEASONAL	APG	Kronsdorf - St. Peter 1 431	NA.	14T-380-0-00431P	NA	NA	NA	NA		×	270	985	220	384	30	0	0	158	84	87	-3	0
2021-09-28	APG	Aschach - Hausruck 2038	14T-220-0-02038F	DIRECT	AT	AT	Aschach	Hausruck	Line	SEASONAL	APG	Kronsdorf - St. Peter 1 432	Kronsdorf - St. Peter 1 432	14T-380-0-00432N	AT	AT	Kronsdorf	St. Peter	Line	×	270	985	220	384	30	0	0	158	84	87	-3	0
2021-09-28	APG	Aschach - Hausruck 2038	14T-220-0-0203BF	DIRECT	AT	AT	Aschach	Hausruck	Line	SEASONAL	APG	St. Peter 2 - St. Peter 1 SPRHU41	St. Peter 2 - St. Peter 1 SPRHUd1	1.4T-38220- SP041V	AT	AT	St. Peter 2	St. Peter 1	Transformer	×	268	985	220	384	30	0	0	156	86	89	-3	0
2021-09-28	APG	Aschach - Hausruck 2038	14T-220-0-02038F	DIRECT	AT	AT	Aschach	Hausruck	Line	SEASONAL	APG	St. Peter 2 - St. Peter 1 SPRHU42	St. Peter 2 - St. Peter 1 SPRHU42	14T-38220-5P042T	AT	AT	St. Peter 2	St. Peter 1	Transformer	×	268	985	220	384	30	0	0	156	85	89	-3	0
2021-09-28	APG	Aschach - Hausruck 2038	14T-220-0-0203BF	DIRECT	AT	AT	Aschach	Hausruck	Line	SEASONAL	APG	St. Peter 2 - St. Peter 1	St. Peter 2 - St. Peter 1	14T-38220- SP043R	AT	AT	St. Peter 2	St. Peter 1	Transformer	×	268	985	220	384	30	0	0	156	86	89	-3	0
2021-09-28	APG	Aschach - Hausruck 2038	14T-220-0-02038F	OPPOSITE	AT	AT	Aschach	Hausruck	Line	SEASONAL										×	443	985	220	384	30	0	0	-154	-69	-91	з	0
2021-09-28	1007	Aschach -	1		17			Our see als			CEPS	Prestice - Etzenricht Etzenricht -	Prestice - Etzenricht	10T-CZ- DE-00004Q	cz	DE	Prestice	Etzenricht	Tieline		474			~~.	~~				~*	-	-	^ <b>`</b>
Previous	1 2	3 4 5	6 7 8 9	10 Next																												

#### 5 **Publication Overview**

#### 5.1 Core Market View

The Core Market View page enables market participants to evaluate the interaction between cross-zonal capacities and cross-zonal exchanges between bidding zones. It is split in two sections.

Max Volume: publication of "Max net position" and "Max exchanges (Maxbex)" for the MTU under consideration. Although this information is published on separate pages too, it is embedded in this page to facilitate the utilisation of the "check volume" part.

Check Volume: an interactive section where user can insert volumes of commercial trades (in terms of hub-to-hub exchanges or hub net export positions) in order to test their feasibilities. The feasibility is assessed for the selected business day and MTU as explained below.

#### <u>Hub-to-h</u>ub (i)

To test the feasibility of trades, users can enter for each border the volume of exchanges they are willing to trade (positive values for direction indicated and negative values if the user wants to test in the other direction) and click in the adjacent box (i) to run the test.

The tool will then test, as per the Ext LTA inclusion methodology implemented in Euphemia, whether the hub-to-hub exchanges fit within the union of the Final FB domain and the Final Bilateral Exchange Restrictions.

If the trades are feasible the cell turns green text "Trades feasible" is displayed. If the trades are not feasible, the cell turns red and the text "Constrained Transmission System" is displayed.

Note: the value for the DE-BE border in the max volume section represents an exchange between the German and Belgian hubs where both the ALEGrO direct DC interconnector as well as the AC grid pathways are used. Whilst the value to fill in the 'check volume part' for the DE-BE (DC) row corresponds to the direct exchange between Germany and Belgium through the ALEGrO interconnector, thus a range between -1000 and + 1000 MW.



### Core MarketView

		1 Check v	olume		2 Max volum	ne
	Here you can check the simultaneou	s execution of trading volum	es of the market involved in the Core Mar	Here you can find the maximal trade volumes (MRMvh) which can be phy	sically transported between t Hubs	two Hubs under the co
		Hub-to-Hub	Test 1		Direction ►	< Direction
	AT⊩CZ	0	(A)	AT►CZ	6307	6128
	AT⊫ HU	0	(U)	AT» HU	3048	4883
	AT⊨SI	0		AT⊢SI	2828	2867
	BE► FR	0		BE►FR	3624	5218
	CZ PL	0		CZ » PL	3348	2110
	CZ⊨SK	0		CZ⊨SK	3972	5338
	DE⊢AT	0		DE⊨AT	6413	6378
	DE⊨BE(DC)	0		DE⊨BE	4858	4497
b-to-Hub	DE⊨ CZ	0		DE⊨CZ	5846	4762
changes	DE⊨FR	0	Trades feàsible	DE+FR	7956	7555
	DE⊨NL	0		DE≻NL	2438	5537
	HR⊢HU	0		HR⊨HU	3667	2661
	HR⊨SI	0		HR⊨SI	2742	2021
	HU►RO	0		HU►RO	2878	637
	HU⊨ SK	0		HU⊨SK	3319	2402
	NL» BE	0		NL»BE	2813	3488
	PL⊨DE	0		PL⊨ DE	2801	2168
	PL⊨SK	0		PL=SK	2160	4193
		Hub positions	Test 1 Test 2		Export	Import
	ALBE	0	(ii) (iii)	ALBE	1000	-1000
	ALDE	0		ALDE	1000	-1000
	AT	0		AT	7763	-7791
	CZ	0		CZ	9077	-10700
	BE	0		BE	6040	-6105
Hob	DE	0		DE	16626	-19869
ions	FR	0	OK Click here	FR	11100	-10176
	HR	0	to test.	HR	4255	-3533
	HU	0		HU	9091	-6099
	NL	0		NL	5750	-4830
	PL	0		PL	3562	-4909
	RO	0		RO	637	-3056
	SI	0		SI	4710	-4621

(i) <u>Hub positions</u>

Users are able to check the feasibility of Hub positions (import/export positions).

- Test 1: The tool will check if the sum of Hub positions equals to zero (ii).
- Test 2: The tool will check whether the specified Hub positions are feasible or not by checking whether the hub positions fit within the union of the Final FB domain and the Final Bilateral Exchange Restrictions

Note: when filling in the hub positions, please be aware about the following relationship between the BE, DE, ALBE and ALDE hubs

- The ALBE and ALDE hubs represent the contribution of the ALEGrO interconnector and have to be filled in symmetrically.
   For example, if ALDE is filled in with 1000 MW then ALBE should be filled in with -1000 MW to configure a 1000 MW export on the German side and a 1000 MW import on the Belgian side of the ALEGrO interconnector
- The BE and DE hubs represent the net positions aside from ALEGrO. Double-counting is to be avoided. For example, to
  model a 3000 MW Core net import for Belgium where 1000 MW comes from ALEGrO, one has to fill in -1000 MW in ALBE
  row and -2000 MW in the BE row. Similar, to model a 5000 MW Core net export for Germany where 1000 MW is exported
  through ALEGrO, one has to fill in 1000 MW in the ALDE row and 4000 MW in the DE row.

Note 2: the check on hub-to-hub exchanges and the check on the hub positions are independent from another. This means that the hub positions specified are not taken into account when testing the feasibility of the specified hub-to-hub exchanges, and vice versa.

	Hub-to-Hub	Test 1
AT►CZ	0	
AT►HU	0	
AT►SI	300	
BE►FR	0	
CZ►PL	0	
CZ►SK	400	
DE►AT	0	
DE►BE(DC)	50	
DE►CZ	0	Trados foasiblo
DE► FR	0	
DE NL	-100	
HR⊳HU	0	
HR► SI	0	
HU►RO	0	
HU►SK	0	
NL►BE	0	
PL►DE	0	
PL►SK	0	

	Hub-to-Hub	Test 1
AT►CZ	0	
AT►HU	10000	
AT►SI	2000	
BE►FR	0	
CZ►PL	0	
CZ►SK	-5000	
DE►AT	0	
DE⊫BE	0	
DE►CZ	0	Constrained
DE► FR	0	System
DE NL	0	
IR►HU	0	
HR►SI	0	
IU►RO	0	
IU⊳SK	0	
NL►BE	0	
PL►DE	0	
PL►SK	0	



	Hub positions	Test 1	Test 2		
ALBE	-50			ALBE	
ALDE	50			ALDE	
AT	0			AT	
CZ	0			CZ	
BE	0			BE	
DE	100			DE	
FR	0	OK		FR	
HR	-100			HR	
HU	0			HU	
NL	0			NL	
PL	0			PL	
RO	0			RO	
SI	0			SI	
SK	0			SK	

	Hub positions	Test 1	Test 2
LBE	-50		
LDE	50		
AT	0		
CZ	0		
BE	0		
DE	100		
FR	0	OK	Trades
HR	-100	UK	feasible
HU	0		
NL	0		
PL	0		
RO	0		
SI	0		
SK	0		

## 5.2 Core Market Graphs

The "Core Market Graphs" illustrates for each Core hub, a graph with the "Min/Max net pos" and "Max exchanges (Maxbex)" for the 24 MTUs of the selected day. Users are able to de/select specific hubs on top of the page.



## 5.3 Core Map

The "Core map" displays the maximum possible bilateral exchanges between each border and the minimum and maximum net positions of each hub on a map representing the Core configuration. The data corresponds to the MTU and Business Day as selected in the filter from the final flow-based computation.





## 5.4 Border Data Overview

This page displays the following information for a selected border:

- The ATC in MW offered for the Day-ahead market coupling (for the non-CORE borders)
- The allocated capacity (or SEC) in MW after Market coupling
- The Price Spread in €/MWh
- The Congestion Income in €
- The nominated volume of the long term allocated product (LTN) in MW
- The Shadow Auction ATC, being the ATC that would be provided to a shadow auction mechanism, in MW
- The Intraday ATC, being the left-over capacity after the FBMC expressed as initial ATC, in MW.

Please note that for the Core internal borders, the ATCs and Congestion Income are not available on a border basis and for the other borders, the long-term nominations, the Shadow Auction ATCs and the intraday ATCs will not be available.



### Border Data Overview

ATH CZ HUHSK	ATHOE ITHAT	ATHHU ITHER	ATHIT ATHS	BE+DE(DC) NL+DE	BE+FR PU+C2	BEHNL PLHOE	C2+AT PL+SK	CZ>DE RO>HU	C2>PL SIFAT	CZ+SK SI>HR	DE►AT SI►HU	DE+86(DC) SI+IT	DE+CZ SK+CZ	DE>DK1 SK>HU	DE+FR SKHPL	DE⊨NL	DE⊨PL	DK1+DE	ES+FR	FR> BE	FR+DE	IR+ES	FR+IT	HR>HU	HR+SI	HUNAT	HUNHR	HU+R0	HUHSI
Date	ATC (MW)	BEC (MW)	Price Spread (C/MWh)	Congestion Inc	ome (C)	LTN (MW)	Shadow Auction /	1C (MW)	Intraday ATC	(MW)																			
2021-01-17						0	599																						
2021-01-17						0	509																						
2021-01-17						0	599																						
2021-01-17						0	599																						
2021-01-17						0	599																						
2021-01-17						0	599																						
2021-01-17						0	720																						
2021-01-17						0	599																						
2021-01-17						0	509																						
2021-01-17						0	599																						
2021-01-17						177	422																						
2021-01-17						177	422																						
2021-01-17						177	422																						
2021-01-17						177	422																						
2021-01-17						177	422																						
2021-01-17						177	422																						
2021-01-17						177	422																						
2021-01-17 17:00:00						177	422																						
2021-01-17 18:00:00						177	422																						
2021-01-17 19:00:00						177	422																						
2021-01-17 20:00:00						169	624																						
2021-01-17 21:00:00						154	445																						
2021-01-17 22:00:00						131	455																						
2021-01-17						98	501																						

## 5.5 D2CF

This page publishes the aggregated assumptions from the grid models for each MTU on TSO and Hub level: Vertical load, generation (production) and net position in MW for each CORE hub and TSO if it differs from the hub level.

For capacity calculation purposes, each Core TSO generates one individual grid model per MTU. Please note that the published load, generation and net positions are based on an AC loadflow solved grid model. Therefore, the generation + load is not necessarily equal to the net position of the hubs due to losses in the AC grid.

- "Vertical load" is the load as seen from the transmission grid in MW in the Individual Grid Model
- "Generation" is the generation in MW in the Individual Grid Model
- "Core net position" is the forecast of the overall balance of the countries in MW in the Individual Grid Models

D2CF																																										_						
															DZCF	per Hut	(in MW																							DZCF p	er TSO (i	in MW)						
					Ver	tical Loa	bd									Gener	ation										ore Ne	t Position	n					VertLoad	Gen	CNP	VertLoad	Gen	CNP	VertLo	ad Ger	CNP	VertLoa	d Ger	CNP	VertLoa	d Gen	CNP
Date	AT	cz	BE	DE F	R H	R HU	NL	PL.	RO	SI	SK	AT C	z s	E DE	FR	HR	ни	NL	PL	RO	51	SK	AT	cz i	SE DE	FR	HR	ни	NL	PL.	RO	SI 5	ж	50	HERTZ		Α	MPRION			CREOS		тв	NNET GI	IBH	TR	ANSNETB	au -
2021-01-16 00:00:00	6142	6434	8803 34	556 58	201 41	5 4776	9769	12375	6520	958	2299 !	5133 81	37 81	53 39368	60028	579	3335	1304	12522	6829	1062 2	463 -3	2049 1	586 -4	178 379	0 -415	1152	-506	912	93	-157	342 1	53	4014	7519	3828	13467	1818	2 3922	415	0	-418	11040	868	5 -2636	5617	4979	-743
2021-01-16 01:00:00	5853	6291	8367 33	403 56	595 43	2 4416	9603	11725	6392	961	2200 !	5111 77	67 79	18 38751	58417	524	3392	0940	11859	6587	1044 3	391 -1	1783 1	362 -6	604 466	0 -520	1170	-89	1010	-51	-291	365 1	82	3762	6672	3236	12834	1791	2 4346	396	0	-399	11018	919	5 -2115	5391	4969	-552
2021-01-16 02:00:00	5734	6316	7923 33	122 55	524 33	3 4220	9291	11409	6371	872	2167	1984 77	65 74	66 37886	57978	537	3324	1550	11537	6449	1006	180 -	1791 1	336 -5	i46 393	6 -521	1152	43	1861	-50	-414	315	0	3537	6474	3252	12490	1773	2 4518	388	0	-391	10911	903	5 -2179	5794	4644	-1298
2021-01-16	5643	6352	7809 33	990 53	537 20	9 4100	9106	11318	6399	868	2124	1568 76	59 73	37 37142	56916	538	3280	1392	11564	6480	1002 :	166 -	1820 1	196 3	48 315	1 -502	1199	108	2069	69	-313	319 3	31	3405	6371	3271	12400	1766	7 4687	390	0	-393	10785	882	3 -2278	6008	4279	-1893

## 5.6 Refprog

The RefProg page display the exchange data per border that are used for merging of the European grid models including HVDCinterconnectors within the synchronous area in MW. Multiple data sources are used:

- Exchanges between two Core hubs are derived from the Core net positions in the CGM thus representing the result of the merging step of the Core capacity calculation process;
- Exchanges on DC links are taken over from the IGMs;
- Exchanges on Core-Swiss and Core-Italian borders are forecasted by the Net Position Forecast tool deployed in Core;
- For other exchanges between a Core and a non-Core hub or between two non-Core hubs, a reference day approach is
  applied thus using historical scheduled commercial exchanges from a previous working day / weekend / bank holiday.



Refprog																																										-		_					_	Diventio
Data	AT C	e 41++	e 41-10	-	88+ 04(00)	85+ M.		80-TE -	OLAT C	-10 40	CHis PR	снат а		06+A7 00	- 88(BC)	oe.cz oe	.ox 00,000	00681			00+NL 0	0.001	00,000	05-75	000 D			OR I	0.00	NO 1	0K,904	on a	on n	er 164			Pla IT	н,як	PROFESSION A	1,UKIA20001 M		65+A1	68+85	-	68,986 P	arte o	a. 102 - 1		ar na	a itumonitat i
2025-05-95	-913	-300	-256	406	-01	-1506	659	248	-750	-1946	209	1440	291	582	479	-329 -2	130 0			-586	594	0	0	-104	0	142	-374	-215	-215	-401	-600	-306	306 22	50 -102	- 3(2	3282	-540	0	0	990	1010	112		10	293	68	554	599 -2	20 50	
20254535	-725	-386	-275	823	-42	-1855	702	237	-758	-1902	-545	604		309	402	-346 -2	490 0			-586	844			-175		16	-490	-215	-215	-401	-600	-306	306 23	50 -125	-385	3210	292			990	1010	-09	- 10	286	198	151	530	641 -3	20 50	
2025-05-15	-712	-325	-292	829	-365	-2541	650	305	-758	-1910	-586	429	175	402	365	-200 -2	500 0			-586	580	0				46	-444	-215	-225	-401	-680	-306	306 23	50 -540	5 -371	2106	1100		0	991	1010	30	40	402	190	100	56	600 -7	20 22	
2025-05-95	61	-64	-338	854	-100	-1547	730	332	-758	-1929	-1149	485	100	258	100	-00 -0	400 0			- 266	-422			-198		12	-370	-225	-225	-40	-600	-305	306 23	50 -159	1 32	2296	1920			990	1009	20		491	190	216	54	650 T	20 57	
2825-05-95	-1024	-76	-450	850	-00	-1900	727	332	-725	-1546	-1911	794	29	1144	40	120 -2	400 0			-586	-365			21		15	-420	-225	-225	-401	-600	-306	306 23	6 -16	-339	3219	1585			991	1009		-110	439	130	166	430	76 3	20 57	
20254555	-1007	-421	-589	900	- 25	-1945	63	150	-726	-1942	-1281	63	12	901	75	-15 -2	500 0			- 266	-24			-140		6	-687	-225	-225	-401	-600	-305	306 23	e5 -198	1 30	2 2 122	1579			991	1009	-29	46	411	157	22	520	402 -7	25 57	
20254535	.20	.321	.271	24	.20	216	1007	-100	125	.455	.4829	-	282	634	20	10. 3	500 0			196	417			4		61	417	315	315	-414	(1)	316	305 22	00 .448		2502	2968			- 100	1211	15	190	10	10	40	- 24	01 3	05 V	
28254555	400		.221	200	- 35		100	-100	-740	-1000	.1356	121	297		20	.158 .3	400			/80	20			-		50	417		325	-		-316	305 10	20. 402		2126	2402			420	407		24	205		40	61	500 .2	-	
21254555	-1001		-336				1007	-100	494	.405	126	104	321	154	195	40 3				.92	-			-105				316	325	-414	(10)	.316	305 10	20 .415	10	2000	414			210	321	0	246	65	44	40	622		-	
2023030		141										174.0			100		-			147	1744			407	-	-	417	114	114	-						2000						-								
20254555				784						- 10.00	1011			200						100	1201						457	114	110					-			170	•		401	1000				497		0			
10:0000				104	100		200		100					-	100						1201			- 100			407													443	1007			~			-			
20254555	-	110		242		1000	114		200			1000		-		10 1				100	100						457	114	110												1007			-				100		
120030						-1461									-									-200						-													-		-					
12:000	-728		-100	780				-100		-049	100	840	-07			-20 -0					240			-139				-110		-40	-000	-306								201	1307			494		-00	083			
143038	-790	106	- 18	810	-247	-900	- 114	-100	-u	-1400	-157	909	411	629	247				0	-400	-44			-30	0	0	50	-110	-110	-401	-000	-306	300 0	0 .00			204	0	0	201	1010	100	110	494	64	-00	600	m -n	W 50	
15.00.00	-718	958	-129	784	-247	-005	(4)	-100		-045	-1299	1306	48	540	140	-200 -3	901 0		•	-982	17	•	•	-10	0	165	64	-235	-216	-40	-660	-306	306 10	09 50		3376	- 55	0	•	411	425	94		HS	66	-50	791	40 3	0 50	
15.00.00	406	508	-128	811	-365	-589	824	-100	207	-348	-016	1004	550	529	305	-10 -1	90 0		•	220	546	•	•	-00	0	501	250	-226	-216	-40	-660	-477	-177 13	07 523		3376	-42	0		510	682	- 75	-115	582	63	-50	792	an a	1 50	
17:00:00	456	63	-86	790	-264	-366	674	-100	99	-854	582	9970	560	29	254	-527 -1	630 0		0	71	770	•	•	-129	0	207	487	-235	-225	-401	-688	-345	345 10		-127	3052	1127	0	0	990	1010	40	-304	229	28	-50	748	20 -25	27 50	
1800.00	-80	206	90	796	-242	-829	1047	-100	74	-645	110	9913	573	-157	142	-609 -1	542 0			17	409		0	-253		128	487	-225	-225	-401	-680	-306	306 -1	57 -454	-15%	3052	91		0	991	1910	40	-394	115	25	-50	699	14 -21	an 50	
120000	-700	525	17	780	-334	-1100	1047	-100	-329	-1178	706	2448	541	126	334	-607 -1	129 O		0	-36	262	0	0	-249	0	100	473	-225	-225	-401	-688	-306	306 -3	47	- 20	3052	951	0	0	990	1211	124	-348	26	+	-50	640	134 -28	30 50	
20:0000	-1145	256	-22	726	-311	-1410	1047	-100	-582	-1556	167	2905	529	912	265	-233 -2	950 0		0	50	-400	0	0	-30	0	600	29	-235	-225	-401	-660	-306	306 - 4	87 -124	-222	3052	439	0	0	991	1309	130	-297	40	-32	-50	536	228 -38	60 50	н
21:0000	-0.28	952		579	-219	-1410	1947	-100	-700	-1940	-609	1550	473	000	219	-327 -2	190 0		0	-694	642	0	•	-15	0	600	-313	-235	-225	-401	-688	-306	306 -6	21 -125	2 -39/5	3052	2401	0	0	990	1211	153	-6	454	-21	-50	484	241 -27	77 59	н
202545555 222030	-994	28	-76	507	-202	-1764	1047	-100	-725	-1930	-1056	\$405	254	367	292	-20 -2	540 0			-586	325	0	0			291	340	-225	-215	-401	-688	-306	306 -3	04 -173	-385	3052	1982		0	990	1211	544	-124	491	0	-50	229	232 -22	25 59	
20254555	-1130	-407	-158	502	-329	-1794	1947	-100	-725	-2000	-704	015	219	1001	329	-152 -2	150 0			-586	536	0	0	-29	0	274	487	-215	-215	-401	-680	-306	306 13	66 -157	4 -290	3052	1955	0	0	910	920	128	-130	491	10	-50	129	40 .12	90 50	

## 5.7 Reference Net Position

This page displays the reference net position assumed for creating the CGM for non-core hubs in the common grid model which are the global Net Positions of this hubs.

Date	AL	BA	BG	CH	DK1	ES	GR	п	ME	МК	РТ	RS	TR	
<b>2021-01-16</b> 00:00:00	59	1209	259	-889	2330	-1033	388	-1950	-427	-140	-2250	676	-309	
<b>2021-01-16</b> 01:00:00	100	1177	63	-2129	2490	-1033	308	-1737	-343	-57	-2250	907	-388	
<b>2021-01-16</b> 02:00:00	120	1223	92	-2817	2500	-586	401	-2188	-350	56	-2250	599	-435	
2021-01-16 03:00:00	130	1153	95	-3334	2490	-46	441	-3056	-318	89	-2250	689	-553	
2021-01-16 04:00:00	145	1173	210	-3401	2480	-834	257	-3027	-273	69	-2385	845	-503	
2021-01-16 05:00:00	92	1261	127	-3232	2500	-748	196	-3104	-277	102	-2385	878	-172	
2021-01-16 06:00:00	-187	1291	21	-3388	2500	-227	393	-3683	-363	-106	-2370	1018	150	
2021-01-16 07:00:00	-277	1276	71	-2454	2480	-706	302	-4828	-232	-214	-1620	1097	150	
2021-01-16 08:00:00	-329	1385	273	-1316	2127	-1478	317	-3412	-10	-257	-1620	863	150	
2021-01-16 09:00:00	-344	1305	556	1458	1580	-1750	291	-2293	0	-399	-1348	604	150	
<b>2021-01-16</b> 10:00:00	-360	1315	555	1623	1641	-2442	273	-1806	5	-389	-656	450	150	
2021-01-16 11:00:00	-366	1315	535	1425	1672	-2342	250	-2251	26	-403	-756	424	150	
<b>2021-01-16</b> 12:00:00	-360	1294	444	1312	1717	-2578	333	-631	11	-408	-937	407	150	
2021-01-16 13:00:00	-350	1295	508	9	1845	-2641	325	-953	-11	-443	-874	502	150	
<b>2021-01-16</b> 14:00:00	-344	1295	498	-1224	2121	-2531	240	-2154	6	-474	-845	609	150	
2021-01-16 15:00:00	-344	1345	615	-981	1901	-2367	127	-1820	-80	-453	-1009	648	150	

## **Reference Net Position**

## 5.8 Initial Computation (Virgin Domain)

This page contains the flow-based parameters of the selected business day and MTU of the initial flow-based computation (virgin domain, RefProg balanced).

Details of each column:



• Date: Business Day and MTU

## Information on the CNE:

- TSO: Indicating the TSO defining the CNE
- CNE\_Name: the human readable name of the CNE as per the naming conventions defined in 9.1
- EIC\_Code: EIC Code of the Critical Network Element
- Direction: Direction of the flow [DIRECT] or [OPPOSITE]
- Hub From: The Hub the CNE is connected from
- Hub To: The Hub the CNE is connected to
- Substation From: The location (substation the CNE is connected from)
- Substation To: The location (substation the CNE is connected to)
- ElementType: Asset Type of the CNE, e.g. Busbar, DC-Link, Generation, Line, Load, PST, Tieline, Transformer
- FmaxType: The Method for determining the Imax i.e. Type of maximum admissible power flow, e.g. Fixed, Dynamic, Seasonal

Please note: External constraints are also displayed in this page, e.g. NL\_import

Information on the Contingency:

- TSO: Indicationg the TSO defining the Contingency
- Contingency Name: The readable name of the Contingency indicating [Hub from Hub to]
- BranchName: In case of multibe branch contingency the name of each branch
- EIC\_Code: EIC Code of the Critical Network Element
- Hub From: The Hub the Contingency is connected from
- Hub To: The Hub the Contingency is connected to
- Substation From: The location (substation the Contingency is connected from)
- Substation To: The location (substation the Contingency is connected to)
- ElementType: Asset Type of the CNE, e.g. Busbar, DC-Link, Generation, Line, Load, PST, Tieline, Transformer

In case a Contingency consists of multiple branches, each branc is displayed as one row associated to the CNE to which the Contingency is applied.

			Information of	n the CO	NTINGE	NCY		
тѕо	Contingency Name	BranchName	EIC_Code	Hub From	Hub To	Substation From	Substation To	ElementType
Elia	380.33 [BE- BE] Y- Courcelles (- Bruegel - Drogenbos) 380.33 [BE- BE] Y- Drogenbos (- Bruegel - Courcelles) 380.33	Y-Bruegel (- Courcelles - Drogenbos) 380.33	22T-BE-IN- LI0017	BE	BE	Bruegel	Mekingen	Line
Addi	tional branch #2:	Y-Courcelles (-Bruegel - Drogenbos) 380.33	22T-BE-IN- LI0017	BE	BE	Courcelles	Mekingen	Line
Addi	tional branch #3:	Y-Drogenbos (-Bruegel - Courcelles) 380.33	22T-BE-IN- LI0017	BE	BE	Drogenbos	Mekingen	Line

## Detailed breakdown of RAM:

- Presolved: if the value is TRUE then the corresponding CNEC constrains the flow-based domain, FALSE
  means a redundant CNEC not constarining the flow-based domain
- RAM: remaining available margin in MW;
- Imax: the maximum admissible current in A
- U: reference voltage of the CNEC in kV



- Fmax: the maximum allowable power flow of the corresponding CNEC in MW
- FRM: flow reliability margin in MW
- F\_(ref,init): the reference flow calculated during the initial flow-based calculation in MW
- F\_nrao: expected flow change due to non-costly remedial actions optimisation in MW
- FOcore: the flow per CNEC in the situation without commercial exchanges within the Core CCR in MW
- FOall: the flow per CNEC in a situation without any commercial exchange between bidding zones within Continental Europe and between bidding zones within Continental Europe and bidding zones of other synchronous areas in MW
- F\_uaf: the flow resulting from assumed commercial exchanges outside the Core region in MW
- AMR: Adjustment for minimum RAM in MW
- LTA\_margin: Flow margin for LTA inclusion where LTA\_margin=max(FLTAmax + FRM-AMR-Fmax; 0) in MW
- CVA: coordinated value adjustment resulting from coordinated validation process in MW
- IVA: individual value adjustment resulting from individual TSO validation process in MW
- Ftotal LTN: flow after consideration of LTN (Ftotal LTN=(F0,core+F LTN)) in MW
- One column per hub with the Power Transfer Distribution Factor value
- . (PTDF\_ALBE;PTDF\_ALDE;PTDF\_AT;PTDF\_CZ;PTDF\_BE;PTDF\_DE;PTDF\_FR;PTDF\_HR;PTDF\_HU;PTDF\_NL;PTDF \_PL;PTDF\_RO;PTDF\_SI;PTDF\_SK)

Please note the attributes F\_nrao, AMR, LTA\_margin, IVA, CVA, Fotal\_LTN are empty/zero because these are determined later on in the capacity calculation process, and hence only relevant for the Pre-Final Computation and Final Computation pages.

Please note the attribute IVA is capped by the Core CCCt in order to ensure a non-negative RAM value. The capped IVA value can differ between the pre-final FB domain and the final FB domain because in the pre-final FB domain the RAM is expressed against a zero-balance reference, whilst in the final FB domain the RAM is expressed against a reference where zero-balance is shifted to the long-term nominations.

**Scope of network elements**: please note that the list of NECs (network elements combined with a contingency) displayed in the domain pages contains more than only CNECs. Hereby an enumeration of other network elements currently displayed:

- Network elements which got filtered out following the 5% ptdf rule. These are monitored network elements according to the CCM and are not part of the pre-solved dataset;
- Network elements with Imax = 9999 and that can appear at first sight as duplicates of CNECs. These CNECs relate to borders between Core and non-Core countries and are technically part of the dataset as they are needed to calculate the non-core exchanges KPI;
- Technical parameters to properly bound the FB domain and thus part of the pre-solved dataset
  - 4 external constraints related to ALEGrO: External Constraint BE\_AL\_export, External Constraint BE\_AL\_import, External Constraint DE\_AL\_export, External Constraint DE\_AL\_import
  - 4 equality constraints

## 5.9 Remedial Actions (Preventive/Curative)

This page displays the Remedial Actions split between curative RA's and preventive RA's.

Users are able to switch between two pages, where one page displays the Preventive RA's that are applied and the other, the Curative RA's that are applied when nRAO was used in the process. If a MTU was not optimized by nRAO this is also shown with the information that "Given hour was not optimized in NRAO), If no data is available for a specific hour, this is also displayed, this could occur due to failing of nRAO in the process,

Baseline means the Tap position of a PST in the CGM before nRAO Application.

More information on the applied RAs can be found in the Handbook for the static grid model here<sup>1</sup>.

<sup>&</sup>lt;sup>1</sup> Link will be functional in December, 2021



## **Remedial Action Preventive**

SEARCH			ORE_TOTAL ROWS ORE_SEARCH ROW ORE_SHOWN ROW	: 5 S: 5 S: 5
	pRA Informa	tion	Para	ameters
Date	pRA Name	TSO	Baseline	After NRAO
<b>2021-08-07</b> 07:00:00	PST_ZANDV D1_PRA	Elia	-5	-5
2021-08-07 07:00:00	PST_Diele_T441	Tennet DE	1	1
2021-08-07 07:00:00	PST_VANYK D1_PRA	Elia	-2	-2
2021-08-07 07:00:00	PST_Roehrsdorf_441	50Hertz	1	1
2021-08-07 07:00:00	PST_ZANDV D2_PRA	Elia	-5	-5

	pRA Inform	ation	Para	imeters
Date	pRA Name	TSO	Baseline	After NRAC
2021-09-29 10:00:00	Given hour v	vas not	optimized in	NRAO

## Remedial Action Curative

ORE_SEARCH			CORE_TOTAL ROWS: 105 CORE_SEARCH ROWS: 105											
			CORE_SHOWN ROWS: 100											
			cRA#1 Information			cR/	#2 Informa	tion	cR/	\#3 Informa	tion	cR/	4#4 Informa	ition
Date	CNEC TSO	CNEC Name	Name	Baseline	After NRAO	Name	Baseline	After NRAO	Name	Baseline	After NRAO	Name	Baseline	After NRAO
2021-08-07 22:00:00	TransnetBW	Grafenrheinfeld - Hoepfingen ge  N-1 Ensdorf - Vigy VIGY1 N	TOP_2N_VIGY_tronconnement_CRA											
<b>2021-08-07</b> 22:00:00	TransnetBW	Grafenrheinfeld - Hoepfingen ge  N-1 Ensdorf - Vigy VIGY2 S	TOP_COMPLEX_VIGY_quarterbar1A_CRA											
<b>2021-08-07</b> 22:00:00	TransnetBW	Buers - Meiningen gn  N-1 Ensdorf - Vigy VIGY1 N	TOP_2N_VIGY_tronconnement_CRA											
<b>2021-08-07</b> 22:00:00	TransnetBW	Buers - Meiningen gn  N-1 Ensdorf - Vigy VIGY2 S	TOP_COMPLEX_VIGY_quarterbar1A_CRA											
<b>2021-08-07</b> 22:00:00	TransnetBW	Buers - Westtirol rt  N-1 Ensdorf - Vigy VIGY1 N	TOP_2N_VIGY_tronconnement_CRA											
<b>2021-08-07</b> 22:00:00	TransnetBW	Buers - Westtirol rt  N-1 Ensdorf - Vigy VIGY2 S	TOP_COMPLEX_VIGY_quarterbar1A_CRA											
2021-08-07 22:00:00	TransnetBW	Buers - Westtirol ws  N-1 Ensdorf - Vigy VIGY1 N	TOP_2N_VIGY_tronconnement_CRA											
2021-08-07 22:00:00	TransnetBW	Buers - Westtirol ws  N-1 Ensdorf - Vigy VIGY2 S	TOP_COMPLEX_VIGY_quarterbar1A_CRA											
<b>2021-08-07</b> 22:00:00	TransnetBW	Gurtweil - Laufenburg ge (Alb Sued)  N-1 Ensdorf - Vigy VIGY1 N	TOP_2N_VIGY_tronconnement_CRA											
2021-08-07 22:00:00	TransnetBW	Gurtweil - Laufenburg ge (Alb Sued)  N-1 Ensdorf - Vigy VIGY2 S	TOP_COMPLEX_VIGY_quarterbar1A_CRA											
2021-08-07 22:00:00	TransnetBW	Kuehmoos - Asphard rt (Wehra)  N-1 Ensdorf - Vigy VIGY1 N	TOP_2N_VIGY_tronconnement_CRA											
<b>2021-08-07</b> 22:00:00	TransnetBW	Kuehmoos - Asphard rt (Wehra)  N-1 Ensdorf - Vigy VIGY2 S	TOP_COMPLEX_VIGY_quarterbar1A_CRA											
		Kushmaar												

## 5.10 Validation Reductions

This page lists CNECs and the TSO:

• for which capacity has been reduced as an outcome of the validation processes, including a justification for this reduction



• that have been added to the final list of CNECs during the validation processes, including a justification of the reasons of why adding a CNEC to ensure operational security. In this case the 'Returned Branch' attribute will contain a value.

The CNEC Name consists of the CNE / Contingency.

Please note that the justification is sent by the TSOs themselves.

The TSOs 50 Hertz, Amprion, APG, TNG, TTG, TTN run the individual validation process commonly with a centralised tool DAVinCy thus resulting in common justifications.<sup>2</sup>

Va	lidat	tion	Red	lucti	ons
	naa			acc	0110

CORE_SEARCH		CORE_TOTAL ROWS: 60069 CORE_SEARCH ROWS: 60069 CORE_SEARCH ROWS: 100							
Date		CNE	C Name		TSO Name	Returned Branch	CVA (MW)	IVA (MW)	Justification
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Bruegel	I - Courcelles 380.34			EUA			753	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Y-Doel (	(-Lillo - Mercator) 380.51 Y-Mercator (-Doel - Lillo) 380.	51		ELIA			763	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00.00:00	Lillo - Zandvliet 380.66 / Y-Doel (	(-Lillo - Mercator) 380.52 Y-Mercator (- Doel - Lillo) 380	52		ELIA			762	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00.00:00	Lillo - Zandvliet 380.66 / Doel - Z	andvliet 380.25			ELIA			720	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Doel - Z	andvliet 380.26			ELIA			681	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Lixhe - 1	Van Eyck 380.91			ELIA			751	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Y-Van E	yck (-Andre Dumont - Gramme) 380.12 Y-Andre Dumo	nt (-Gramme - Van Eyck) 380.12 Y-Gramme (-Andre Dumont -	- Van Eyck) 380.12	ELIA			750	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Y-Brueg	gel (-Mercator - Verbrande Brug) 380.36 Y-Mercator (-E	ruegel - Verbrande Brug) 380.36 Y-Verbrande Brug (-Bruegel	- Mercator) 380.36	ELIA			753	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Horta -	Mercator 380.73			ELIA			755	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Y-Merca	ator (-Lint - Massenhoven) 380.61 Y-Massenhoven (-Lin	it - Mercator) 380.61		ELIA			752	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00.00:00	Lillo - Zandvliet 380.66 / PST Var	n Eyck 1			ELIA			750	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00.00:00	Lillo - Zandvliet 380.66 / PST Var	n Eyck 2			ELIA			750	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Maasbr	acht - Van Eyck 380 Black/27 Maasbracht - Van Eyck 3	0 Black/27		ELIA			750	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Maasbr	acht - Van Eyck 380 White/28 Maasbracht - Van Eyck 3	80 White/28		ELIA			750	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / ALEGrO	)			ELIA			752	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Achene	-Lonny 380.19 Achene-Lonny 380.19			ELIA			823	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 /				ELIA			823	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Avelgen	n - Avelin 380.80 Avelgem - Avelin 380.80			ELIA			823	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00:00:00	Lillo - Zandvliet 380.66 / Avelgen	n - Horta 380.101			ELIA			823	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22 00.00:00	Lillo - Zandvliet 380.66 / Y-Brueg	sel (+Courcelles - Drogenbos) 380.33 Y+Courcelles (+Bru	egel - Drogenbos) 380.33 Y-Drogenbos (-Bruegel - Courcelles)	) 380.33	ELIA			823	IVA applied to reduce MCCC to 20% as fallback for missing validation
2021-09-22	Lille Zandulint 200 CC / Devenal	Courcellar 200.24			C11A			010	M sealed to reduce MCCC to 2006 or fellowly for mirring validation
Previous 1	2 3 4 5 6 7 8 9	599 600 601 Next							

## 5.11 Pre-Final Computation (Early Publication)

This page displays the pre final flow-based parameters of the selected business day and MTU before long term nominations (zero balanced).

The detailed data items are the ones described under 5.5 Initial Computation (Virgin Domain), plus the following data items describing the minimum capacity targets in relation to CEP70 implementation (70%, action plan, derogation):

- R\_amr %: describes the target for the totality of market exchanges incl. non-Core exchanges
- R\_amr\_justification: optional attribute through which Core TSOs can share additional information on how the R\_amr has been calculated
- minRAM target Core %
  - Objective: describe the capacity for Core exchanges by deducing the non-Core exchanges from the R\_amr
  - o Currently implemented
    - In case AMR > 0: the value is correctly displaying minRAM\_target\_Core = R\_amr Fuaf
      - In case AMR = 0: the value shown is the RAM as percentage of Fmax → will be fixed in a future release so that it also represents R\_amr Fuaf

<sup>&</sup>lt;sup>2</sup> A short description of the approach of the 6 TSOs (50 Hertz, Amprion, APG, TNG, TTG, TTN): When the pattern of net positions represented by an analysed vertex of the flow-based domain cannot be realised within operational security limits while taking into account all available RAs, the domain must be contracted by applying IVA on a subset of CNECs. Normally, these would be the CNECs that are adjacent to the vertex. But a TSO can apply IVA only on its own CNECs. When one or more of the CNECs do not belong to the TSO(s) performing the individual validation, the required contraction of the domain can only be achieved by applying IVA on own CNECs that are not adjacent to the vertex. Since these "substitute" CNECs are not presolved, i.e., are "outside" of the FB domain, a first part of the IVA is needed just to shift them into the analysed vertex. Only the remainder of the IVA effectively contracts the domain.



**Scope of network elements**: please note that the list of NECs (network elements combined with a contingency) displayed in the domain pages contains more than only CNECs. Hereby an enumeration of other network elements currently displayed:

- Network elements which got filtered out following the 5% ptdf rule. These are monitored network elements according to the CCM and are not part of the pre-solved dataset;
- Network elements with Imax = 9999 and that can appear at first sight as duplicates of CNECs. These CNECs relate to borders between Core and non-Core countries and are technically part of the dataset as they are needed to calculate the non-core exchanges KPI;
- Technical parameters to properly bound the FB domain and thus part of the pre-solved dataset
  - 4 related to ALEGrO: External Constraint BE\_AL\_export, External Constraint BE\_AL\_import, External Constraint DE\_AL\_export, External Constraint DE\_AL\_import
  - 4 equality constraints

## 5.12 Long Term Nomination

This page displays the nominated capacity from long-term auctions in MW, per border in both directions. Most of the borders make use of FTR (financial transmission rights) thus no capacity is nominated. The borders using PTR may have physical nominations.

Date	AT► CZ	AT≻ HU	AT► SI	BE►DE	CZ≻AT	CZ≻ DE	CZ≻PL	CZ⊁ SK	DE≻ BE	DE► CZ	DE≻ PL	HR► HU	HR⊁ SI	HU≻ AT	HU► HR	HU► RO	HU► SI	HU≻ SK	PL► CZ	PL► DE	PL► SK	RO► HU	SI► AT	SI► HR	SI► HU	SK≻ CZ	SK≻HU	SK► PL
2021-10-14 00:00:00	0	2	216	0	0	0	0	195	0	0	0	30	0	0	177	4	0	0	0	0	0	2	0	397	0	0	125	0
2021-10-14 01:00:00	0	2	199	0	0	0	0	195	0	0	0	30	0	0	177	4	0	0	0	0	0	2	0	398	0	0	125	0
2021-10-14 02:00:00	0	2	191	0	0	0	0	195	0	0	0	30	0	0	177	4	0	0	0	0	0	2	0	403	0	0	125	0
2021-10-14 03:00:00	0	2	193	0	0	0	0	195	0	0	0	30	0	0	177	4	0	0	0	0	0	2	0	407	0	0	125	0
2021-10-14 04:00:00	0	2	203	0	0	0	0	195	0	0	0	30	0	0	177	4	0	0	0	0	0	2	0	399	0	0	125	0
2021-10-14 05:00:00	0	2	241	0	0	0	0	195	0	0	0	30	0	0	177	4	0	0	0	0	0	2	0	402	0	0	125	0
2021-10-14 06:00:00	0	2	265	0	0	0	0	195	0	0	0	45	0	0	152	4	0	0	0	0	0	2	0	384	0	0	125	0
2021-10-14 07:00:00	0	2	265	0	0	0	0	208	0	0	0	37	0	0	152	4	0	0	0	0	0	2	0	372	0	0	125	0
2021-10-14 08:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	379	0	0	125	0
2021-10-14 09:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	372	0	0	125	0
2021-10-14 10:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	369	0	0	125	0
2021-10-14 11:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	370	0	0	125	0
2021-10-14 12:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	373	0	0	125	0
2021-10-14 13:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	372	0	0	125	0
2021-10-14 14:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	375	0	0	125	0
2021-10-14 15:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	388	0	0	125	0
2021-10-14 16:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	389	0	0	125	0
2021-10-14 17:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	392	0	0	125	0
2021-10-14 18:00:00	0	2	265	0	0	0	0	208	0	0	0	27	0	0	152	4	0	0	0	0	0	2	0	387	0	0	125	0

## 5.13 Final Computation

This page contains the final flow-based parameters of the selected business day and MTU following long term nominations (Ltnom balanced).

The detailed data items are the ones as described under 5.5 Initial Computation (Virgin Domain) plus the following data items describing the the minimum capacity targets in relation to CEP70 implementation (70%, action plan, derogation):

- R\_amr %: describes the target for the totality of market exchanges incl. non-Core exchanges
- R\_amr\_justification: optional attribute through which Core TSOs can share additional information on how the R\_amr has been calculated
- minRAM target Core %
  - o Objective: describe the capacity for Core exchanges by deducing the non-Core exchanges from the R\_amr
  - Currently implemented
    - In case AMR > 0: the value is correctly displaying minRAM\_target\_Core = R\_amr Fuaf
      - In case AMR = 0: the value shown is the RAM as percentage of Fmax → will be fixed in a future release so that it also represents R\_amr – Fuaf



**Scope of network elements**: please note that the list of NECs (network elements combined with a contingency) displayed in the domain pages contains more than only CNECs. Hereby an enumeration of other network elements currently displayed:

- Network elements which got filtered out following the 5% ptdf rule. These are monitored network elements according to the CCM and are not part of the pre-solved dataset;
- Network elements with Imax = 9999 and that can appear at first sight as duplicates of CNECs. These CNECs relate to borders between Core and non-Core countries and are technically part of the dataset as they are needed to calculate the non-core exchanges KPI;
- Technical parameters to properly bound the FB domain and thus part of the pre-solved dataset
  - 4 related to ALEGrO: External Constraint BE\_AL\_export, External Constraint BE\_AL\_import, External Constraint DE\_AL\_export, External Constraint DE\_AL\_import
  - 4 equality constraints

## 5.14 Max Net Positions

These page displays the minimum and maximum Core net positions in MW of each hub for each MTU of the day. These indicators are extracted from the union of the final flow-based domain and final bilateral exchange restriction which together describe the cross-zonal capacities provided to the market coupling.

Мах	Net	Positions

Date	Min ALBE	Min ALDE	Min AT	Min CZ	Min BE	Min DE	Min FR	Min HR	Min HU	Min NL	Min PL	Min RO	Min SI	Min SK	Max ALBE	Max ALDE	Max AT	Max CZ	Max BE	Max DE	Max FR	Max HR	Max HU	Max NL	Max PL	Max RO	Max SI	Max SK
<b>2021-01-19</b> 00:00:00	-1000	-1000	-7853	-11049	-6500	-16984	-9157	-4111	-5872	-4912	-5410	-2059	-4805	-5741	1000	1000	8657	8268	5670	12404	9058	4029	8090	5750	3484	1405	4217	6825
2021-01-19 01:00:00	-1000	-1000	-7847	-11090	-6500	-16978	-9301	-4057	-6039	-4856	-5324	-2239	-4814	-5813	1000	1000	8688	8507	5668	12642	9795	4270	8474	5139	3597	1459	4269	6690
2021-01-19 02:00:00	-1000	-1000	-7930	-11013	-6500	-16813	-9466	-3675	-6188	-4919	-5202	-2362	-4846	-5323	1000	1000	8467	8327	5736	12845	9514	4337	8353	5332	3557	1508	4264	6699
2021-01-19 03:00:00	-1000	-1000	-8044	-10857	-6500	-16324	-10199	-3757	-6367	-4730	-5024	-2442	-4735	-5316	1000	1000	8278	8532	5756	13271	8679	4551	8561	5169	3491	1672	4382	6777
2021-01-19 04:00:00	-1000	-1000	-8105	-10907	-6500	-16499	-10371	-3873	-6326	-4593	-5053	-2435	-4725	-5316	1000	1000	8166	8685	5830	14012	8611	4639	8420	5601	3579	1643	4316	6741
<b>2021-01-19</b> 05:00:00	-1000	-1000	-8083	-10839	-6500	-16401	-11296	-3543	-6477	-4430	-4946	-2186	-4772	-5775	1000	1000	7431	8560	6085	14354	7802	4284	7709	5750	4209	1720	4290	6607
2021-01-19 06:00:00	-1000	-1000	-8312	-10630	-6500	-15159	-11608	-4161	-6467	-4415	-4752	-2149	-4703	-5814	1000	1000	7167	8206	5669	14624	8268	4891	7388	5750	3967	1670	4585	6712
<b>2021-01-19</b> 07:00:00	-1000	-1000	-8699	-9997	-6500	-14588	-10122	-4298	-6507	-4104	-4997	-2124	-4499	-5933	1000	1000	6846	7200	5677	12222	9045	5234	7439	4761	3899	1877	4885	6813
2021-01-19 08:00:00	-1000	-1000	-8640	-9912	-6500	-14267	-11276	-4041	-6552	-4106	-5328	-2084	-4401	-5932	1000	1000	6868	7124	5051	13282	8357	5024	7485	5187	3174	1813	5092	6952
2021-01-19 09:00:00	-1000	-1000	-8437	-10028	-6500	-14426	-10082	-4231	-6473	-4299	-5284	-2038	-4518	-5961	1000	1000	6870	7146	5224	12562	9124	5017	7441	4828	3079	1845	4882	6817
<b>2021-01-19</b> 10:00:00	-1000	-1000	-8733	-10025	-6500	-15758	-8808	-4588	-6200	-4591	-5144	-2046	-4601	-6049	1000	1000	6853	7185	5637	11698	10391	5506	7827	4762	3418	1782	4759	6729
2021-01-19 11:00:00	-1000	-1000	-8735	-9947	-6500	-15443	-8720	-4773	-6100	-4587	-5121	-2038	-4573	-5987	1000	1000	6848	7237	5473	12056	10212	5684	7864	4950	3219	1836	4766	6678
2021-01-19	-1000	-1000	-8718	-9921	-6500	-15865	-8561	-4610	-6072	-4541	-5205	-2082	-4597	-6109	1000	1000	6856	7263	5457	11916	10416	5611	7946	5080	3159	1785	5205	6726

## 5.15 Max Exchanges (Maxbex)

This page displays the maximum bilateral exchanges between two CORE hubs with the assumption that the other net positions are zero. These indicators are extracted from the union of the final flow-based domain and final bilateral exchange restriction which together describe the cross-zonal capacities provided to the market coupling.



Max Exch	anges	(MaxE	ex)																			Downloa	ad
Date	AT► BE	AT► CZ	AT► DE	AT► FR	AT► HR	AT► HU	AT►NL	AT► PL	AT► RO	AT► SI	AT► SK	BE►AT	BE►CZ	BE►DE	BE► FR	BE►HR	BE►HU	BE►NL	BE►PL	BE►RO	BE► SI	BE► SK	CZ►A'
2021-01-19 00:00:00	5599	7153	6390	5015	2974	2796	2967	2573	1399	2830	4046	3841	3991	4218	3314	2873	2645	4418	1996	1362	3649	3594	5784
<b>2021-01-19</b> 01:00:00	5599	7473	6390	5013	3234	2773	2983	2573	1407	2830	4156	3936	4120	4321	3400	3116	2624	4380	1996	1370	3650	3698	6141
<b>2021-01-19</b> 02:00:00	5599	7301	6390	5012	3137	2792	3054	2589	1423	2830	2879	4167	4109	4575	3599	3023	2643	4286	2008	1385	3651	3037	5869
<b>2021-01-19</b> 03:00:00	5630	7204	6400	5037	3191	2800	2975	2593	1418	2830	2895	4366	4059	4794	3771	3075	2652	4224	2009	1380	3651	3054	6124
2021-01-19 04:00:00	5687	7514	6391	5135	3334	2807	2908	2600	1446	2830	2863	4461	4216	4898	3853	3211	2657	4150	2014	1408	3651	3016	6185
<b>2021-01-19</b> 05:00:00	5584	6348	6391	5301	2986	2788	2869	2590	1389	2830	3934	4923	4016	5014	4252	2886	2639	4005	2006	1352	3653	3833	6187
2021-01-19 06:00:00	5690	5695	6362	5279	3649	2727	2665	2274	1398	2812	4174	3956	3776	4000	3418	3489	2581	3718	1796	1361	3630	3687	5837
2021-01-19 07:00:00	5443	5153	6256	5151	3677	2705	2481	2401	1378	2622	4258	3918	3783	3772	3450	3885	2576	3216	1866	1343	3379	3669	5220
2021-01-19 08:00:00	5451	5132	6263	5158	3675	2728	2633	2398	1377	2624	4453	3582	3731	3672	3124	3571	2587	3528	1859	1343	3200	3596	5238
<b>2021-01-19</b> 09:00:00	5453	5131	6263	5159	3772	2727	2641	2399	1376	2625	4467	3600	3752	3816	3136	3629	2585	3551	1860	1342	3373	3600	5238
<b>2021-01-19</b> 10:00:00	5447	5128	6255	5155	3677	2713	2602	2392	1374	2624	4544	3703	3764	4130	3225	3734	2573	3500	1856	1340	3374	3660	5233
2021-01-19 11:00:00	5449	5150	6252	5157	3676	2694	2643	2376	1465	2624	4544	3511	3659	3913	3055	3540	2552	3584	1846	1429	3371	3634	5231
2021-01-19 12:00:00	5449	5150	6252	5157	3778	2708	2632	2370	1582	2624	4617	3625	3755	4039	3154	3654	2566	3537	1842	1543	3372	3662	5227
2021-01-19	5444	5152	6253	5153	3817	2673	2754	2412	1652	2625	4650	3738	3755	4166	3252	3767	2544	3866	1870	1610	3374	3663	5224

## 5.16 Allocation Constraints

As per the Core CCM, Belgium, Poland and the Netherlands are allowed to use external constraints.

	B	E	P	L
Date	Import	Export	Import	Export
2021-09-22 00:00:00	6500		662	5039
2021-09-22 01:00:00	6500		45	5731
2021-09-22 02:00:00	6500		0	6199
2021-09-22 03:00:00	6500		0	5987
2021-09-22 04:00:00	6500		441	5332
2021-09-22 05:00:00	6500		1084	3959
2021-09-22 06:00:00	6500		1671	1298
2021-09-22 07:00:00	6500		2211	0
2021-09-22 08:00:00	6500		2891	0
2021-09-22 09:00:00	6500		5142	0
2021-09-22 10:00:00	6500		5289	0
2021-09-22 11:00:00	6500		5380	0
2021-09-22 12:00:00	6500		5460	0
2021-09-22 13:00:00	6500		5461	0
2021-09-22 14:00:00	6500		4813	76
2021-09-22 15:00:00	6500		4665	14
2021-09-22 16:00:00	6500		4848	0
2021-09-22 17:00:00	6500		5667	0
2021-09-22 18:00:00	6500		7122	0
2021-09-22 19:00:00	6500		7607	0
2021-09-22 20:00:00	6500		7268	0
2021-09-22	6500		5755	79



When external constraints are expressed as a limitation on the Core net position, they appear as part of the FB parameter set. This practice is applied by the Netherlands.

When external constraints are expressed as a limitation on the SDAC net position, they are send as a separate data flow to the market coupling, called Allocation Constraints. This practice is applied by Belgium (import direction) and Poland (import and export direction). The Allocation Constraints page thus displays the Allocation constraints in MW send by Elia and PSE.

Note: there exist also 4 external constraints related to the DE-BE HVDC interconnector ALEGrO (BE\_AL\_import, BE\_AL\_export, DE\_AL\_import, DE\_AL\_export). These external constraints are of a different nature i.e. they describe the 1000 MW technical capacity of the interconnector.

## 5.17 Final Bilateral Exchange Restrictions (DFPs)

This page displays:

- In case of normal operation: the LTA domain shifted with the effect of long-term nominations (LTN). Together with the final flow-based domain it represents the cross-zonal capacities provided to the market coupling.
- In case of the day-ahead capacity calculation fails to provide the flow-based parameters in three or more consecutive hours: the default FB parameters (in MW). As per Core CCM Art 4(4) the default FB parameters are defined based on the LTA capacity for each Core oriented bidding zone border, increased by the minimum of the two adjustments provided by the TSO(s) on each side of the bidding zone border. The adjustments reflect part of the LT capacity which is reserved for day-ahead, if such practice is applicable on the concerned bidding zone border. The values displayed represent the default FB parameters including the effect of long-term nominations (LTN).

## Final Bilateral Exchange Restrictions

Date	AT►CZ	AT► HU	AT> SI	BE≻ DE	CZ≻AT	CZ> DE	CZ≻ PL	cz≻sk	DE≻ BE	DĐ+ CZ	DE> PL	HR≻ HU	HR►SI	HU► AT	HU≻ HR	HU►RO	HU► SI	HU► SK	PL►CZ	PL► DE	PL⊁ SK	RO► HU	SI► AT	SI► HR	SI≻ HU	SK> CZ	SK> HU	SK> PL
2021-09-22 00:00:00	500	393	508	400	500	1949	0	1095	400	398	0	1401	1267	399	499	489	0	998	0	0	0	610	692	432	0	1153	999	o
2021-09-22 01:00:00	500	393	524	400	500	1949	0	1095	400	398	0	1401	1268	399	499	489	0	998	0	0	0	610	676	431	0	1153	999	0
2021-09-22 02:00:00	500	393	532	400	500	1949	0	1095	400	398	0	1401	1267	399	499	489	0	998	0	0	0	610	668	432	0	1153	999	0
2021-09-22 03:00:00	500	393	530	400	500	1939	0	1095	400	408	0	1401	1265	399	499	489	o	998	0	0	0	610	670	434	0	1153	999	o
2021-09-22 04:00:00	500	393	522	400	500	1939	0	1095	400	408	0	1401	1274	399	499	489	0	998	0	0	0	610	678	425	0	1153	999	0
2021-09-22 05:00:00	500	393	488	400	500	1949	0	1095	400	398	0	1401	1263	399	499	489	0	998	0	0	0	610	712	436	0	1153	999	0
2021-09-22 06:00:00	500	393	348	400	500	1949	0	1095	400	398	0	1341	1254	399	559	489	0	998	0	0	0	610	852	445	0	1153	999	0
2021-09-22 07:00:00	500	393	348	400	500	1949	0	1082	400	398	0	1335	1249	399	565	489	0	998	0	0	0	610	852	450	0	1166	999	0
2021-09-22 08:00:00	500	393	348	400	500	1949	0	1082	400	398	0	1335	1254	399	565	489	0	998	0	0	0	610	852	445	0	1166	999	0
2021-09-22 09:00:00	500	393	365	400	500	1949	0	1082	400	398	0	1341	1250	399	559	489	0	998	0	0	0	610	835	449	0	1166	999	0
2021-09-22 10:00:00	500	393	370	400	500	1949	0	1082	400	398	0	1341	1246	399	559	489	0	998	0	0	0	610	830	453	0	1166	999	0
2021-09-22 11:00:00	500	393	369	400	500	1949	0	1082	400	398	0	1341	1250	399	559	489	0	998	0	0	0	610	831	449	0	1166	999	0
2021-09-22 12:00:00	500	393	351	400	500	1949	0	1082	400	398	0	1341	1251	399	559	489	0	998	0	0	0	610	849	448	0	1166	999	0
2021-09-22 13:00:00	500	393	354	400	500	1949	0	1082	400	398	0	1335	1248	399	565	489	0	998	0	0	0	610	846	451	0	1166	999	0
2021-09-22 14:00:00	500	393	363	400	500	1949	0	1082	400	398	0	1335	1251	399	565	489	0	998	0	0	0	610	837	448	0	1166	999	o
2021-09-22 15:00:00	500	393	356	400	500	1949	0	1082	400	398	0	1335	1261	399	565	489	0	998	0	0	0	610	844	438	0	1166	999	0
2021-09-22 16:00:00	500	393	348	400	500	1949	0	1082	400	398	0	1335	1263	399	565	489	0	998	0	0	0	610	852	436	0	1166	999	0
2021-09-22 17:00:00	500	393	348	400	500	1949	0	1082	400	398	0	1335	1263	399	565	489	0	998	0	0	0	610	852	436	0	1166	999	0
2021-09-22 18:00:00	500	393	348	400	500	1949	0	1082	400	398	0	1335	1259	399	565	489	0	998	0	0	0	610	852	440	0	1166	999	o
2021-09-22 19:00:00	500	393	348	400	500	1949	0	1082	400	398	0	1335	1265	399	565	489	0	998	0	0	0	610	852	434	0	1166	999	0
2021-09-22 20:00:00	500	393	348	400	500	1949	0	1082	400	398	0	1335	1264	399	565	489	0	998	0	0	0	610	852	435	0	1166	999	0
2021-09-22 21:00:00	500	393	348	400	500	1949	o	1082	400	398	0	1335	1261	399	565	489	o	998	0	0	o	610	852	438	0	1166	999	0
2021-09-22																												

## 5.18 Available Transmission Capacity on Core external borders

This page displays the ATC values in MW made available for the Day-Ahead market coupling and this for the two directions of the concerned borders.

For the full list	of Core ext	ernal borde	ers please se	e the ENTSC	)-E Transp	arency pla	atform.			
Date	AT►IT	BG►RO	DE► DK1	DK1►DE	ES►FR	FR►ES	FR►IT	IT►AT	IT► FR	RO►
<b>2021-11-19</b> 00:00:00	215	870	1740	2500	3607	3330	3479	145	1205	113
<b>2021-11-19</b> 01:00:00	215	867	1760	2500	3607	3330	2856	145	1205	113
<b>2021-11-19</b> 02:00:00	215	856	1760	2500	3607	3330	2637	145	1205	113
<b>2021-11-19</b> 03:00:00	215	857	1760	2500	3607	3283	2593	145	1205	113
<b>2021-11-19</b> 04:00:00	215	859	1720	2500	3700	3283	2637	145	1205	113
<b>2021-11-19</b> 05:00:00	215	856	1690	2500	3700	3283	2564	145	1205	113
<b>2021-11-19</b> 06:00:00	215	855	1650	2160	3700	3283	2564	145	1205	113
<b>2021-11-19</b> 07:00:00	215	849	1440	1600	3561	3422	2408	145	1205	118
<b>2021-11-19</b> 08:00:00	215	841	1440	1620	3561	3422	2517	145	1205	118
<b>2021-11-19</b> 09:00:00	176	845	1440	1670	3561	3422	2408	145	1205	118
<b>2021-11-19</b> 10:00:00	116	833	1440	1750	3561	3422	2654	145	1205	11
<b>2021-11-19</b> 11:00:00	116	832	1440	1930	3237	3422	2306	145	1205	119

## 5.19 Scheduled Exchanges

This page displays the capacity allocated by the market coupling algorithm in two directions for defined borders in MW.

Schedule	d Excha	anges													Downloa	d
Date	AT►CZ	AT► DE	AT►HU	AT► SI	BE► DE	BE►FR	BE► NL	CZ►AT	CZ►DE	CZ►PL	CZ►SK	DE►AT	DE► BE	DE► CZ	DE►FR	DE►I
<b>2021-10-14</b> 00:00:00	0	92.3	0	0	0	0	0	360.7	482.5	0	249	0	311	0	0	0
<b>2021-10-14</b> 00:00:00	0	92.3	0	0	0	0	0	360.7	482.5	0	249	0	311	0	0	0
<b>2021-10-14</b> 01:00:00	0	401.7	0	0	110.6	0	0	294.7	436.1	0	203.7	0	0	0	0	0
<b>2021-10-14</b> 01:00:00	0	401.7	0	0	110.6	0	0	294.7	436.1	0	203.7	0	0	0	0	0
<b>2021-10-14</b> 02:00:00	0	121.4	0	0	382	0	0	346.7	495.3	0	353.7	0	0	0	0	0
<b>2021-10-14</b> 02:00:00	0	121.4	0	0	382	0	0	346.7	495.3	0	353.7	0	0	0	0	0
2021-10-14 03:00:00	0	157.4	0	0	465.9	0	0	371.1	449.3	0	365.7	0	0	0	0	0

## 5.20 Net Position

This page displays the CORE net positions after Market Coupling in MW.



## Net Position

Date	ALBE	ALDE	AT	BE	œ	DE	FR	HR	HU	NL	PL	RO	SI	SK
<b>2021-10-31</b> 00:00:00	0	0	739.8	-142.6	1450.9	3751.5	-4851.5	-286.8	-2441.5	1391.8	1085.1	-557.6	319.1	-458.2
<b>2021-10-31</b> 01:00:00	0	0	619.6	-15	2539	2472.5	-4513.6	-348	-2292.6	1302.8	1069.7	-792.4	300.1	-342.1
<b>2021-10-31</b> 02:00:00	0	0	743.8	275.1	3544.6	1255	-5116.4	-311	-2281.7	1383.4	1099.3	-696.5	394	-289.6
<b>2021-10-31</b> 02:00:00	0	0	505.1	-162.5	3401.3	1259	-3819.2	-321	-2246.5	835	1294.2	-821.8	340	-263.6
<b>2021-10-31</b> 03:00:00	0	0	-1420.3	-131.8	4323.5	-3104.2	1504.2	-21	-2289.2	370.9	1729.5	-461.1	-211.6	-288.9
<b>2021-10-31</b> 04:00:00	0	0	-1408	-247.5	4227.1	-3780.6	1743.3	-111.2	-2371.2	809.6	1609.4	-588.5	339	-221.4
<b>2021-10-31</b> 05:00:00	0	0	-1515.3	25.4	4285.7	-3412.4	1188.7	-127	-2536	791.2	1488.3	-297.2	316	-207.4
<b>2021-10-31</b> 06:00:00	0	0	-885.2	-96.7	3752.7	-2307.4	244.5	32	-2619.1	742.8	1627.7	-470.7	278	-298.6
<b>2021-10-31</b> 07:00:00	0	0	601.5	-264.4	1391.3	3418	-2444.5	-247	-2534.5	683.9	787	-1314.5	304.8	-381.6
<b>2021-10-31</b> 08:00:00	0	0	996.4	-218.6	1937.7	2260.9	-2460.9	-301	-2196.1	653.4	746.6	-1248.1	233	-403.3
<b>2021-10-31</b> 09:00:00	0	0	882.9	-285.5	2627.2	690.8	-1631	-371	-2155.4	658.4	839.3	-1007.9	168	-415.8
<b>2021-10-31</b> 10:00:00	0	0	911.1	-259	2588.7	282.6	-1323.7	-353	-1999.3	663.2	1057.9	-1249.2	154.9	-474.2
<b>2021-10-31</b> 11:00:00	0	0	-1012.9	106.1	3174.1	-3420.1	2207.3	-297	-1877.7	-7.4	1910.1	-537.9	157	-401.6
<b>2021-10-31</b> 12:00:00	0	0	-1006.2	87.2	3265.9	-3780.2	2364.9	-245	-1809.2	31.2	1970.2	-589.1	184	-473.7
<b>2021-10-31</b> 13:00:00	0	0	-931.1	-170.5	3423.8	-3731.2	2134.1	-191	-1868.8	722.6	1906.6	-1050.5	229.9	-473.9
<b>2021-10-31</b> 14:00:00	0	0	-1098.3	-57.1	3206.3	-3364.1	2079.9	-85	-2234.5	725.2	1783.6	-756.8	269	-468.2

## 5.21 Intraday ATC

This page displays the remaining capacity left after the Day-Ahead capacity allocation, expressed as initial ID ATCs for two directions of the CORE borders in MW.

The initial ATC takes into account how each Core TSO defines the parameters wrt virtual capacity. As defined in the Core ID CCM, Core TSOs are allowed to remove virtual capacity prior to extracting the left-overs.

The initial ATCs are subject to decrease/increase actions. As for the former CWE borders a reporting solution for these decrease/increase was in place, it has been kept in the Core Publication Tool. A full overview of the resulting ID ATCs for all Core borders as applied in XBID can be consulted on the ENTSO-E transparency platform.

# JAOD Joint Advantion Office

## Intraday ATC

		AT≻ DE		BE►DE		BE►FR		BE►NL		DE• AT		DE> BE		DE≻ FR		DE≻ NL		FR> BE		FR► DE		NL⊁ BE		NL► DE
Date	Initial	In/Decrease																						
<b>2021-10-21</b> 00:00:00	5404	0	1066	-457	2072	0	1077	0	11521	0	1762	0	11479	0	11526	0	1181	0	6490	0	1830	0	6841	0
2021-10-21 01:00:00	6105	0	1018	-786	1690	0	1011	0	11159	0	2035	0	11415	0	11460	0	1512	0	6860	0	2131	0	7322	0
2021-10-21 02:00:00	5038	0	860	-733	1389	0	849	-849	11265	0	2105	0	11574	0	11578	0	1587	0	7031	0	2206	0	7629	0
2021-10-21 03:00:00	5879	0	856	-729	1475	0	847	-847	11270	0	2243	0	11608	0	11580	0	1609	0	6704	0	2367	0	7231	0
2021-10-21 04:00:00	5654	0	1103	0	1986	0	1090	0	11399	0	2322	0	11853	0	11797	0	1643	0	6433	0	2453	0	6993	0
2021-10-21 05:00:00	5368	0	1111	0	1965	-1965	1094	0	11773	0	2396	0	12613	0	12365	0	1710	0	6064	0	2522	0	6488	0
2021-10-21 06:00:00	5513	0	1180	-1053	2099	0	1155	0	12492	0	2283	0	13059	0	10409	0	1578	0	6266	0	2284	0	8545	0
2021-10-21 07:00:00	5375	0	1087	0	1931	0	1064	0	12822	0	2108	0	13389	0	10505	0	1458	0	6099	0	2108	0	8310	0
2021-10-21 08:00:00	5622	0	1172	0	2152	0	1158	0	12178	0	2062	0	12402	0	9754	0	1391	0	6533	-100	2062	0	9215	0
<b>2021-10-21</b> 09:00:00	6242	0	1225	-1098	2161	0	1196	0	11164	0	2082	0	11167	0	9156	0	1449	0	7287	-10	2084	0	10103	0
<b>2021-10-21</b> 10:00:00	6137	0	1285	-340	2299	0	1260	0	11161	0	2209	0	11320	0	9259	0	1533	0	7169	-4	2212	0	9976	0
2021-10-21 11:00:00	5868	0	1317	-700	2462	0	1309	0	11240	0	2444	0	11357	0	9077	0	1616	0	7026	-3000	2450	0	10105	0
2021-10-21 12:00:00	5764	0	1265	-691	2420	-1000	1238	0	11056	0	2555	0	11130	0	8837	0	1657	0	7112	0	2563	0	10580	0
2021-10-21 13:00:00	5729	0	1263	0	2434	-2000	1228	0	10858	0	2631	0	10951	0	8659	0	1699	0	7165	0	2642	0	10919	0
<b>2021-10-21</b> 14:00:00	5770	0	1356	0	2600	-500	1325	0	11047	0	2533	0	11159	0	8814	0	1644	0	7105	0	2540	0	10472	0
2021-10-21 15:00:00	6003	0	1414	-414	2557	0	1391	0	11196	0	2091	0	11355	0	9246	0	1452	0	7153	0	2093	0	9967	0
2021-10-21 16:00:00	5720	0	1146	0	2085	0	1130	0	11835	0	2103	0	12229	0	9625	0	1429	0	6737	0	2104	0	9504	0
<b>2021-10-21</b> 17:00:00	5863	0	1045	0	1870	0	1025	0	11638	0	2326	0	11960	0	9557	0	1582	0	6851	-3000	2329	0	9644	0

## 5.22 Price Spread

This page indicates the market price spread in €/MWh for the two directions of the defined borders.

Price Spre	ad																									
Date	AT►DE	AT►IT	AT►SI	BE►DE(DC)	BE►FR	BE≻NL	DE►AT	DE►BE(DC)	DE►DK1	DE►FR	DE≻NL	DK1►DE	ES►FR	FR≻BE	FR►DE	FR≻ES	FR►IT	HR►SI	IT►AT	IT►FR	IT►SI	NL►BE	NL►DE	SI►AT	SI≻HR	SI≻IT

## 5.23 Shadow Prices

This page displays the binding constraints (CNECs) after Market Coupling, with its shadow price. The shadow price represents the increase in social welfare resulting from making 1 MW more capacity available to the market on this element. The structure of the page is the same as for the initial/final Computation page cf. 5.5 with the exception that the column "pre-solved" is replaced with the shadow price the limiting CNEC has.

## 5.24 Congestion Income

This tab gathers the net congestion income per hub and per TSO for the CORE region, and the gross congestion income (without UIOSI taken into account) for the non-CORE borders in €.

Congesti	on li	nco	me	(in	€)																									
			Net	Cong	estion	n Incon	ne Pe	r Hub				N	et Conį	gestion Incom	e per TSO						Gre	oss Conge	stion Inc	ome per l	Border					
Date	AT	BE	DE	FR	HR	NL	SI	DK1	ES IT	AMPRION	APG	ELIA	RTE	TENNET BV	TENNET GMBH	TRANSNETBW	AT≻IT	AT►SI	DE≻DK1	DK1►DE	ES≻FR	FR≻ES	FR≻IT	HR≻SI	IT►AT	IT≻FR	IT►SI	SI►AT	SI►HR	SI≻IT

## 5.25 Shadow Auction ATC

This page displays the ATC for SDAC fall-back procedure (Shadow Auctions) per border in the two directions.



Shadow A	Auction	ATC																			Downlo	ad
Date	AT► CZ	AT► DE	AT► HU	AT►SI	BE►DE(DC)	BE► FR	BE►NL	CZ► AT	CZ► DE	CZ►PL	CZ► SK	DE►AT	DE≻ BE(DC)	DE►CZ	DE►FR	DE► NL	DE► PL	FR► BE	FR►DE	HR►HU	HR► SI	HU►A
<b>2021-01-19</b> 00:00:00	575	4805	145	524	250	450	619	425	2233	0	1330	4816	250	462	1000	1080	0	1600	1349	954	1506	745
2021-01-19 01:00:00	1455	2819	585	741	999	739	1122	1622	1371	0	1012	1361	465	761	1622	641	0	2092	2869	821	1075	1705
2021-01-19 02:00:00	575	4805	145	524	250	450	619	425	2233	0	1330	4816	250	462	1000	1080	0	1600	1349	954	1510	745
<b>2021-01-19</b> 03:00:00	575	4805	145	524	250	450	619	425	2233	0	1330	4816	250	462	1000	1080	0	1600	1349	954	1502	745
2021-01-19 04:00:00	575	4805	145	524	250	450	619	425	2233	0	1330	4816	250	462	1000	1080	0	1600	1349	954	1507	745
<b>2021-01-19</b> 05:00:00	575	4805	145	524	250	450	619	425	2233	0	1330	4816	250	462	1000	1080	0	1600	1349	954	1503	745
2021-01-19 06:00:00	575	4805	59	524	250	450	619	425	2233	0	1330	4816	250	462	1000	1080	0	1600	1349	929	1498	831
2021-01-19 07:00:00	555	4805	59	347	250	450	619	445	2233	0	1317	4816	250	462	1000	1080	0	1600	1349	909	1486	831
2021-01-19 08:00:00	555	4805	59	347	250	450	619	445	2233	0	1317	4816	250	462	1000	1080	0	1600	1349	889	1493	831
2021-01-19 09:00:00	555	4805	59	347	250	450	619	445	2233	0	1317	4816	250	462	1000	1080	0	1600	1349	889	1487	831
2021-01-19 10:00:00	555	4805	59	347	250	450	619	445	2233	0	1317	4816	250	462	1000	1080	0	1600	1349	889	1496	831
2021-01-19 11:00:00	555	4805	59	347	250	450	619	445	2233	0	1317	4816	250	462	1000	1080	0	1600	1349	889	1492	831
2021-01-19 12:00:00	555	4805	59	347	250	450	619	445	2233	0	1317	4816	250	462	1000	1080	0	1600	1349	889	1499	831
2021-01-19	1086	2744	438	607	913	633	1173	1241	1169	381	777	1025	404	652	1317	745	263	2228	2533	799	898	1540

## 5.26 Spanning/Default flow-based Parameters

This page displays MTUs in which a fallback was applied during capacity calculation like spanning or default flow-based parameters due to technical or other issues in the daily process.

Date	Computation	Туре
<b>2021-01-10</b> 18:00:00	Initial	Spanning
<b>2021-01-10</b> 18:00:00	Final	Spanning
<b>2021-01-10</b> 18:00:00	Pre-Final	Spanning
<b>2021-01-10</b> 19:00:00	Initial	Spanning
<b>2021-01-10</b> 19:00:00	Final	Spanning
<b>2021-01-10</b> 19:00:00	Pre-Final	Spanning

## Spanning / DFP

## 5.27 Long Term Allocation

This page displays the in the long term (yearly/monthly) allocated capacity in MW, per border in both directions.

The LTA domain is introduced with the Extended LTA Approach where cross-zonal capacities consist of a flow-based domain without LTA inclusion and a LTA domain.

# JACO JANE Alcoation Office

## LTA

Date	AT►CZ	AT≻ HU	AT> SI	BE> DE	CZ≻AT	CZ> DE	CZ> PL	cz⊧sk	DE> BE	DD+ CZ	DE> PL	HR> HU	HR≻SI	HU► AT	HU≻ HR	HU►RO	HU⊳ SI	HU► SK	PL►CZ	PL► DE	PL⊁ SK	RO► HU	SI► AT	SI≻ HR	SI≻ HU	SK» CZ	SK> HU	SK> PL
2021-09-29 00:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 01:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 02:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 03:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 04:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 05:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 06:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 07:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	o	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 08:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 09:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 10:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 11:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 12:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 13:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 14:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 15:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 16:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 17:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 18:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 19:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 20:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	0	0	630	600	849	0	998	999	0
2021-09-29 21:00:00	300	300	350	400	500	1949	0	1250	400	398	0	900	850	392	1000	469	0	998	0	o	0	630	600	849	0	998	999	0

## 6 Backup Tool

In case a critical issue occurs with the Core Capacity Calculation Tool, a Backup Tool is used to generate the capacity calculation outputs for the Market Coupling. In such case, a more limited set of information is published on the Publication Tool, namely for the concerned business day data is published on the following pages whilst the other pages will remain empty:

- Spanning/DFP indicating the concerned Business Day consists of Default FB parameters
- Final Bilateral Exchange Restrictions in this case representing the Default FB parameters
- Allocation Constraints
- LTA
- LTN

## 7 Web Service

On https://core-parallelrun-publicationtool.jao.eu/core/api, users will find:

- Endpoint (drop down): Displays the different available publications.
- Request-tab: Displays the parameter structure which will be needed to retrieve the data, as it is a GET-method it will be needed to append the parameters to the URL
- Response-tab: displays how the response will be structured
- Test-tab: what the URL looks like with the provided parameters.



## API

ENDPOINT       Max Exchanges (MaxBex)       URL       GET     https://core-parallelrun-publicationtool.jao.eu/api/core/maxExchanges/index
Request Response Curr
DATE (UTC)
2021-01-20T23-00-00 0007 (you can change the date in the many on the left)
you can charge the date in the mend of the left)
REQUESTED URL (GET)
https://core-parallelrun-publicationtool.jao.eu/api/core/maxExchanges/index?date=2021-01-20T23%3A00%3A00.000Z
RESPONSE HEADERS
<pre>{     "content-type": "application/json; charset=utf-8",     "date": "Thu, 11 Feb 2021 02:13:16 GMT",     "server": "Microsoft-IIS/10.0",     "transfer-encoding": "chunked",     "x-frame-options": "DENY",     "x-powered-by": "ASP.NET" }</pre>
BESDINKE CONTENT
{
"maxExchanges": [
{
"1d: 1809, "dataTimulta": "2021 01 2012:00:007"
"border AT BE": 5207,
"border_AT_CZ": 7559,
"border_AT_DE": 6369,
"border_AT_FR": 4982,
Border_Al_HK : 4132, "border_L HI": 3131
"border AT NL": 2983.
"border_AT_PL": 2105,
"border_AT_RO": 1339,
"border AT SI": 2745.

## 8 Publication tool (underlying architecture)

The publication tool website is developed with a .netCore backend and a react frontend, communicating via rest-api. A .netCore service runs on a separate server saving all data retrieved via FTP into an SQL-database.



## 9 Annex

## 9.1 Naming Convention for CNECs

Core TSO have defined the following naming conventions for CNECs.

- Line: "AVELGEM-HORTA 380.101"
- PST: "PST ZANDVLIET 1"
- Tripod line: "Y-DELLMENSINGEN-HOHENECK-VÖHRINGEN rot", where
  - The Y stands for the node connecting all three branches of the tripod.
    - The firstly mentioned substation after the Y defines the branch of the tripod that is monitored i.e. Dellmensingen to the Y-node in this case
- TSOs harmonize the descriptive name of cross-border network elements with their neighbors

## 9.2 Naming Convention for RAs

## 9.2.1 Remedial Action Naming conventions

For Remedial Actions, the agreed naming conventions are:

## 9.2.2 Topological

- Opening a line: TOP\_OPEN\_SubstationA\_SubstationB\_ElementIdentifier, Example: TOP\_OPEN\_Mercator\_Horta\_73
- Closing a line: TOP\_CLOSE\_SubstationA\_SubstationB\_ElementIdentifier, Example: TOP\_CLOSE\_Mercator\_Horta\_73
- Split in multiple nodes: TOP\_#NODES\_Substation, Examples: TOP\_2N\_Dellmensingen; TOP\_3N\_VIGY

## 9.2.3 Complex action

TOP\_COMPLEX\_SubstationA\_SubstationB\_SubstationC\_...

• Example: TOP\_COMPLEX\_GYOR\_LITR\_GABC

TSOs may include an optional suffix '\_PRA' or '\_CRA' in case the RA is specifically designed to be applied only as PRA or CRA. The example should read: *TOP\_COMPLEX\_GYOR\_LITR\_GABC\_CRA*"

## 9.2.4 PST taps

PST\_SubstationName\_Enumeration Example: PST\_DIELE\_441; PST\_VANYK\_2

## 9.2.5 Miscellaneous

- Special protection schemes that are applied in case of tripping of network elements are indicated with prefix "SPS" e.g. "SPS1\_Pleinting\_St. Peter Tr3\_CRA".
- Transfomers with angle regulation are indicated with prefix "AT" e.g. "AT\_Mikulowa\_1\_PRA", "AT\_Mikulowa\_2\_PRA", "AT\_Mikulowa\_1\_CRA", "AT\_Mikulowa\_2\_CRA". Their impact as remedial action is implemented as a change of the phase angle between the coupled girds (400/220kV).