

<p><b><u>CORESΟ Engineers</u></b></p> <p><b><u>North :</u></b> NYAZIKA Paget</p> <p><b><u>South :</u></b> DECKERS Bram</p>	<p><b>Day Ahead report for</b></p> <p><b>25 January 2018</b></p>
<p><b>Security Levels:</b></p> <p><b>CWE: Critical constraint detected in Netherlands to be monitored and managed in real time with redispatching.</b></p> <p><b>CEE: No critical constraint detected.</b></p> <p><b>CSE: No critical constraints detected.</b></p>	

#### Key overall conditions

#### Outages table

#### Exchange program forecasts

#### ELIA expected flows & PSTs tap position

#### CEE Renewable Power Generation & Forecast

#### CWE, CSE & SWE Renewable Power Forecast (D-1 and D-2)

#### RTE flows on cross-border lines

#### N state flows at 10:30 and 19:30

#### Special topologies at 10:30 and 19:30

#### North analyses results

Constraints on Elia, RTE (North) and 50HzT 400kV grids and tie-lines

Constraints greater than 100% on NL + Amprion 400kV grids and greater than 120% on DE, CZ, PL and SK 400kV grids

0

50HzT DC loopflows sensitivity

#### South analyses results

#### N state flows Off-Peak & Peak

#### Special topologies

Sensitivity coefficients for the Pentalateral instruction

Constraints on APG, Eles, RTE (South), Swissgrid and Terna 400kV grids and tie-lines

Final PSTs settings

#### Conclusion

## Key overall conditions

Load & Generation margin forecast			Main generating units connected to the grid in DACF					
ELIA			Elia	Doel	Pmax (MW)	1000	1	1900
						450	2	
Peak load [MW]	10800	18:00		Tihange		1000	2	2900
						450	2	
Generation Margin	Sufficient			Coo		230	3	1170
						160	3	
			50HzT	Rostock	Pmax (MW)	530	1	530
				Janschwalde		500	6	3000
				Boxberg		500	2	2800
						900	2	
				Schw. Pumpe		800	2	1600
				Lippendorf		920	2	1840
RTE			RTE	Gravelines	Pmax (MW)	900	6	5400
Peak load [MW]	74000	19:00		Chooz		1500	2	3000
				Cattenom		1300	4	5200
Generation Margin	Sufficient			Fessenheim		900	1	900
				Penly		1300	2	2600
NATIONAL GRID (UK time)				Paluel		1300	3	3900
Peak load [MW]	46600	17:30		Nogent s/ Seine		1300	2	2600
				Bugey		900	4	3600
Generation Margin	Sufficient			St Alban		1300	2	2600
				Cruas		900	3	2700
TERNA				Tricastin		900	4	3600
Peak load [MW]	47948	18:30						
Generation Margin	Sufficient							

### Generation margin legend:

**Green:** Sufficient margin available. No risk for need of inter-TSO solicitation due to margin issues.

**Orange:** Tight margin available. Low risk for need of inter-TSO solicitation due to margin issues.

**Red:** Insufficient margin available. High risk for need of inter-TSO solicitation due to margin issues.

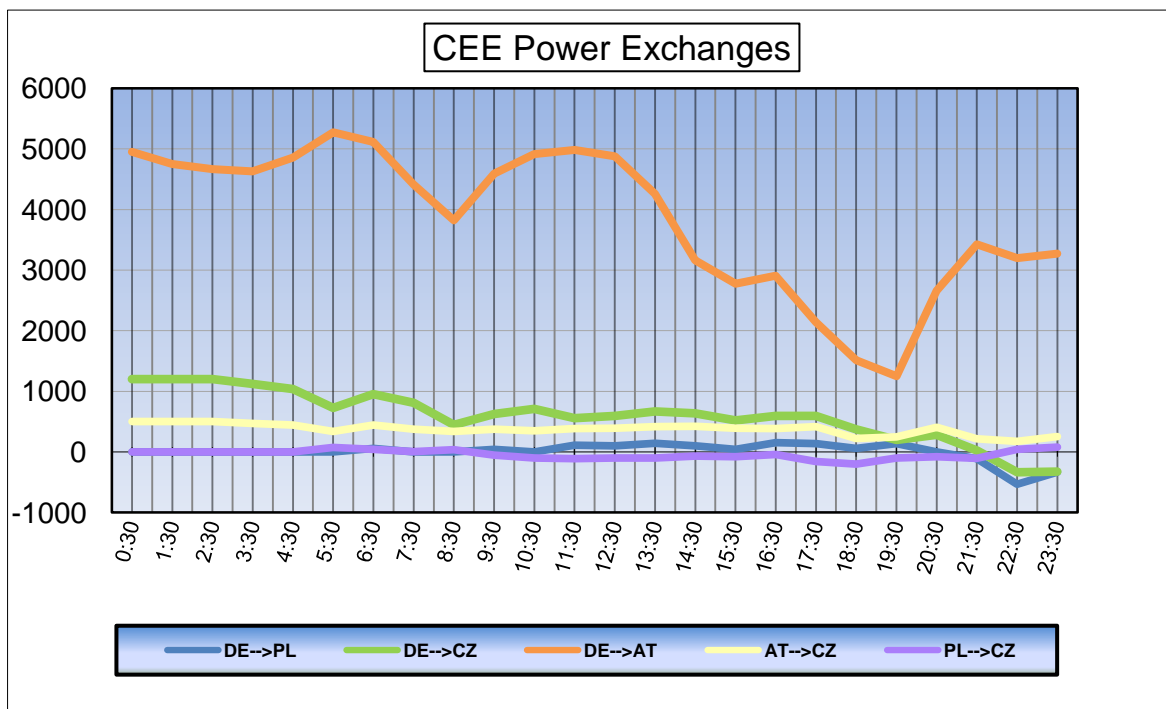
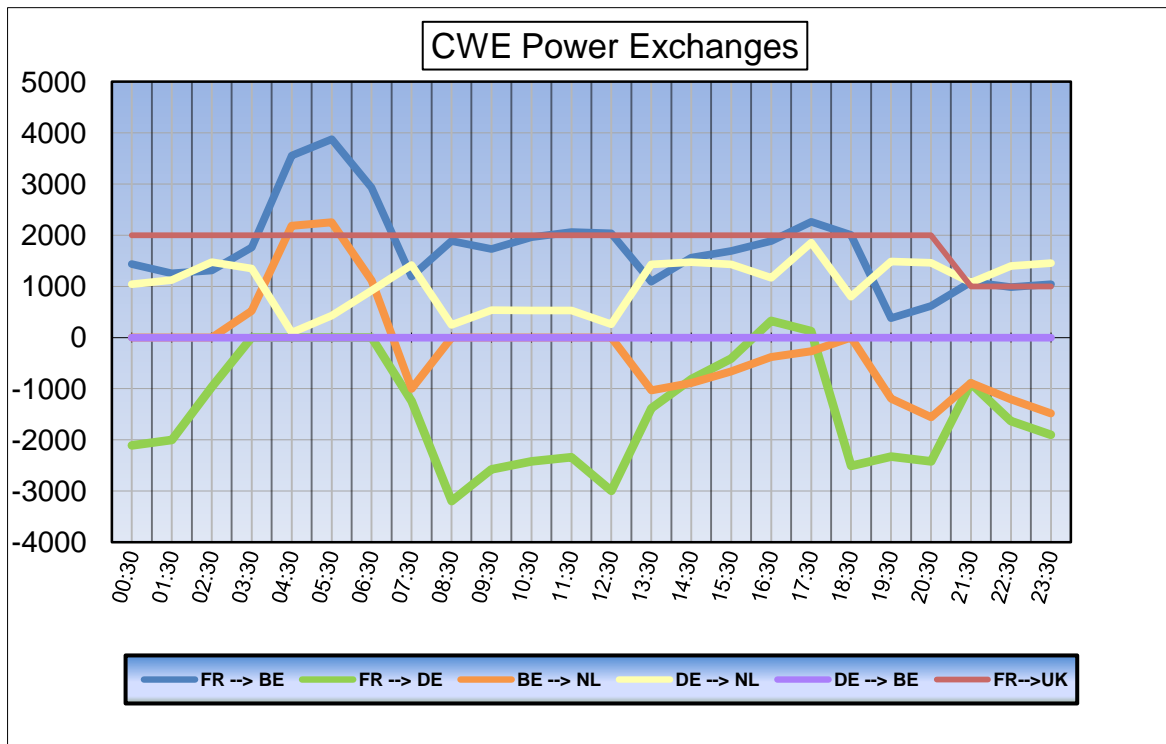
### Comments:

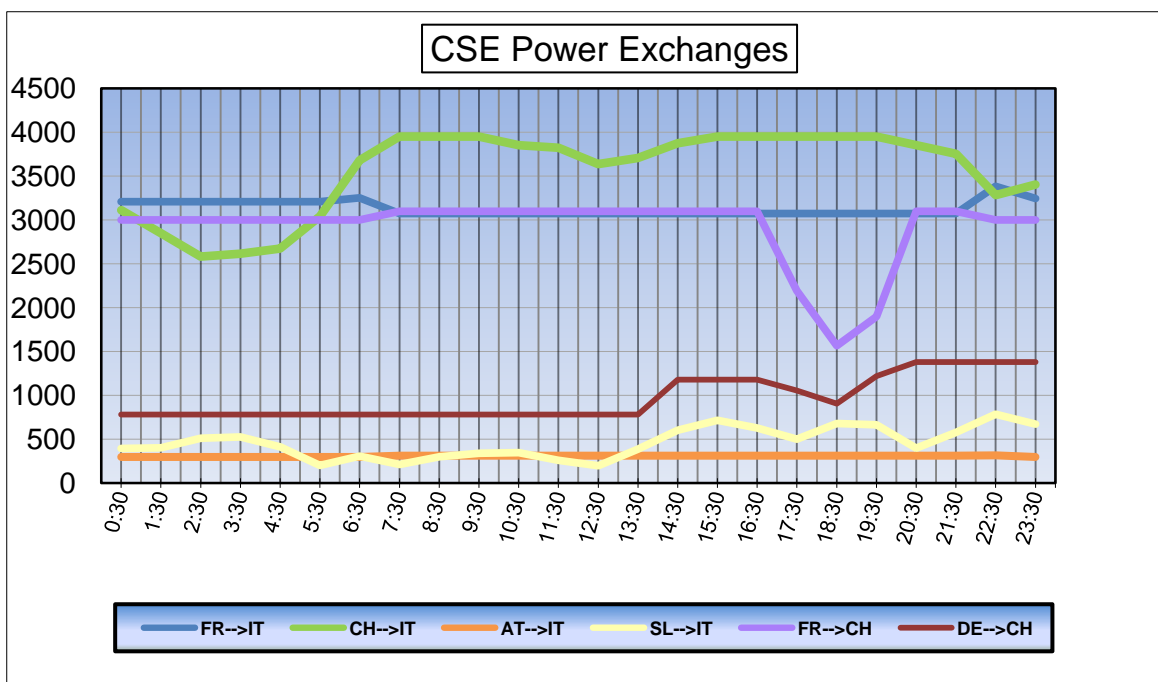
CWE / CEE	RTE agrees to implement 2 nodes at Chooz 400kV and to open standby transformer at Mazure if needed for Chooz-Monceau constraint.
	Tennet NL requested Zandvliet PSTs to -12,-12 and implemented 2 nodes at Lelystad to manage flows on Ens-Lelystad circuit.
CSE	Due to merging issues, the ES DACF files have been replaced with files of BD 24/01/2017 for following timestamps: 10:30, 11:30, 12:30, 13:30,14:30. Please be aware that this can have an impact on the studies performed.

## Outages table

OUTAGES					
Owner	Type of element	Line name	start	end	Comments
50HzT	Fossil.Gen	BOXBERG _ Unit Q 400 kV	22/01/2018	25/01/2018	277 MW (reduced)
50HzT	Hydro.Gen	GOLDISTHAL _ Unit A 400 kV	22/01/2018	26/01/2018	265 MW
50HzT	Hydro.Gen	MARKERSBACH _ Unit D 400 kV	28/09/2017	27/04/2018	160 MW
50HzT	Line	EULA _ Wolframhausen 357 220 kV	06/10/2017	16/03/2018	
50HzT	Line	HAGENWERDER _ SCHMÖLLN 554 400 kV	22/01/2018	28/01/2018	
50HzT	Line	KRUMMEL _ HAMBURG Öst 991 400 kV	25/01/2018	25/01/2018	
50HzT	Line	LUBMIN _ WIKINGER 281 220 kV	26/09/2017	31/01/2018	
50HzT	Line	MARKERSBACH _ T connection ZWOENITZ 400 kV	24/01/2018	26/01/2018	daily
50HzT	Line	RAGOW _ WUSTERMARK 521 400 kV	22/01/2018	28/01/2018	
50HzT	Line	ROHRSDORF _ T connection ZWOENITZ 400 kV	24/01/2018	26/01/2018	daily
50HzT / PSE	Line	KRAJNIK _ VIERRADEN 507 225 kV	22/06/2016	31/05/2018	Long term outage
50HzT / PSE	Line	KRAJNIK _ VIERRADEN 508 225 kV	22/06/2017	31/05/2018	Long term outage
AMP / TEN DE	Line	NEHDEN _ TWISTETAL W 400 kV	08/01/2018	23/02/2018	daily
AMPRION	Line	NEHDEN _ ARPE Sud 400 kV	15/01/2018	02/02/2018	
AMPRION	Line	NEHDEN _ UENTROP Sauerland Nord 400 kV	15/01/2018	02/02/2018	daily
APG	Line	KAINACHTAL _ SUDBURGENLAND 400 kV	24/01/2018	25/01/2018	daily
APG	Line	ST PETER _ Salzburg 455 220 kV	22/01/2018	26/01/2018	ALTERNATING WITH 456
APG	Line	ST PETER _ Salzburg 456 220 kV	22/01/2018	26/01/2018	ALTERNATING WITH 455
CEPS	Line	DASNY _ KOCIN 473 400 kV	08/01/2018	26/01/2018	
CEPS / SEPS	Line	NOSOVIC _ VARIN 404 400 kV	15/01/2018	02/03/2018	
CREOS	Line	BERTRANGE _ SCHIFFLANGE West 220 kV	08/01/2018	02/03/2018	
ELES	Line	BERICEVO _ KRSKO 2 400 kV	22/01/2018	25/01/2018	
ELES / HOPS	Line	KRSKO _ TUMBRI 1 400 kV	22/01/2018	02/03/2018	
ELIA	Line	GEZELLE _ MAERLANT 109 400 kV	25/01/2018	09/02/2018	
ELIA	Line	GEZELLE _ STEVIN 111 400 kV	19/09/2017	02/03/2018	
ELIA	Line	GEZELLE _ STEVIN 112 400 kV	19/09/2017	02/03/2018	
ELIA	Line	MAERLANT _ GEZELLE 110 400 kV	25/01/2018	09/02/2018	
ELIA	Nuc.Gen	DOEL _ Unit 3 (1000MW) 400 kV	23/09/2017	16/04/2018	Forced outage
HOPS	Line	BRINJE _ KONJSKO 220 kV	17/01/2018	27/01/2018	
PSE	Line	DUNOWO _ SLUPSK 400 kV	25/01/2018	28/01/2018	
PSE	Line	POLANIEC _ TARNOW 400 kV	22/01/2018	26/01/2018	daily
PSE	Line	TUCZNAWA _ RZESZOW 400 kV	22/01/2018	26/01/2018	daily
RTE	Line	CHEVALET _ ARGOEUVES 1 380 kV	24/01/2018	23/02/2018	
RTE	Line	PLESSIS GASSOT _ PENCHARD 1 400 kV	24/01/2018	25/01/2018	
RTE	Nuc.Gen	CRUAS _ Unit 2 (900MW) 400 kV	02/12/2017	30/03/2018	
RTE	Nuc.Gen	FESSENHEIM _ Unit 2 (900MW) 400 kV	01/01/2017	15/03/2018	
RTE	Nuc.Gen	PALUEL _ Unit 2 (1300MW) 400 kV	01/08/2015	15/04/2018	
S.GRID	Line	BICKIGEN _ METTLEN 220 kV	22/01/2018	26/01/2018	No. 1 circuit Daily
S.GRID	Line	BICKIGEN _ METTLEN 220 kV	22/01/2018	26/01/2018	No. 2 circuit Daily
S.GRID	Line	CHAMOSON _ MUHLEBERG "Sanetsch 2" 220 kV	24/10/2017	30/03/2018	
S.GRID	Line	CHATELARD _ NANT DE DRANCE 400 kV	16/01/2018	27/04/2018	
S.GRID	Line	LIMMERN _ TIERFEHD 1 400 kV	28/01/2017	31/07/2018	
S.GRID	Nuc.Gen	BEZNAU _ BEZNAU G11 220 kV	13/03/2015	28/02/2018	182 MW
S.GRID	Nuc.Gen	BEZNAU _ BEZNAU G12 220 kV	13/03/2015	28/02/2018	182 MW

## Exchange program forecasts





## ELIA expected flows & PSTs tap position

		Node 1	Node 2	Order	00:30	03:30	04:30	07:30	09:30	10:30	12:30	15:30	17:30	19:30	22:30	23:30
BE	FR	ACHENE	LONNY	380.19	132	-92	-378	67	240	177	220	-45	-152	360	172	211
BE	FR	AUBANGE	MONT ST MARTIN	220.51	-30	-114	-173	-18	16	13	0	-71	-71	68	39	27
BE	FR	AUBANGE	MOULAIN	220.51	-31	-115	-165	-31	-3	0	-15	-82	-82	51	24	10
BE	FR	AVELGEM	AVELIN	380.80	41	-423	-697	-225	-115	-157	-70	-469	-661	119	-330	-365
BE	FR	AVELGEM	MASTAING	380.79	-140	-262	-420	-303	-283	-305	-256	-427	-553	-213	-324	-347
BE	FR	MONCEAU	CHOOZ	220.48	-114	-123	-173	-149	-139	-147	-135	-179	-223	-134	-149	-171
BE	NL	VAN EYCK 1	MAASBRACHT	380.27	-541	-288	-158	-567	-748	-757	-785	-665	-649	-812	-759	-835
BE	NL	VAN EYCK 2	MAASBRACHT	380.28	-278	15	262	-272	-394	-449	-546	-335	-182	-454	-529	-579
BE	NL	ZANDVLIET	BORSSELE	380.29	-324	-123	-56	-507	-492	-493	-549	-434	-346	-553	-375	-406
BE	NL	ZANDVLIET	GEERTRUIDENBERG	380.30	-179	204	399	-172	180	161	88	324	426	93	72	-10
BE	LU	BELVAL	SCHIFFLANGE	220.511	17	77	173	-16	3	-10	2	21	-36	-100	-38	-73

BE	FR	TOTAL		-142	-1129	-2006	-659	-284	-419	-256	-1273	-1742	251	-568	-635
BE	NL	TOTAL		-1322	-192	447	-1518	-1454	-1538	-1792	-1110	-751	-1726	-1591	-1830
BE	LU	TOTAL		17	77	173	-16	3	-10	2	21	-36	-100	-38	-73
TOTAL BELGIAN IMPORT/EXPORT				-1447	-1244	-1386	-2193	-1735	-1967	-2046	-2362	-2529	-1575	-2197	-2538

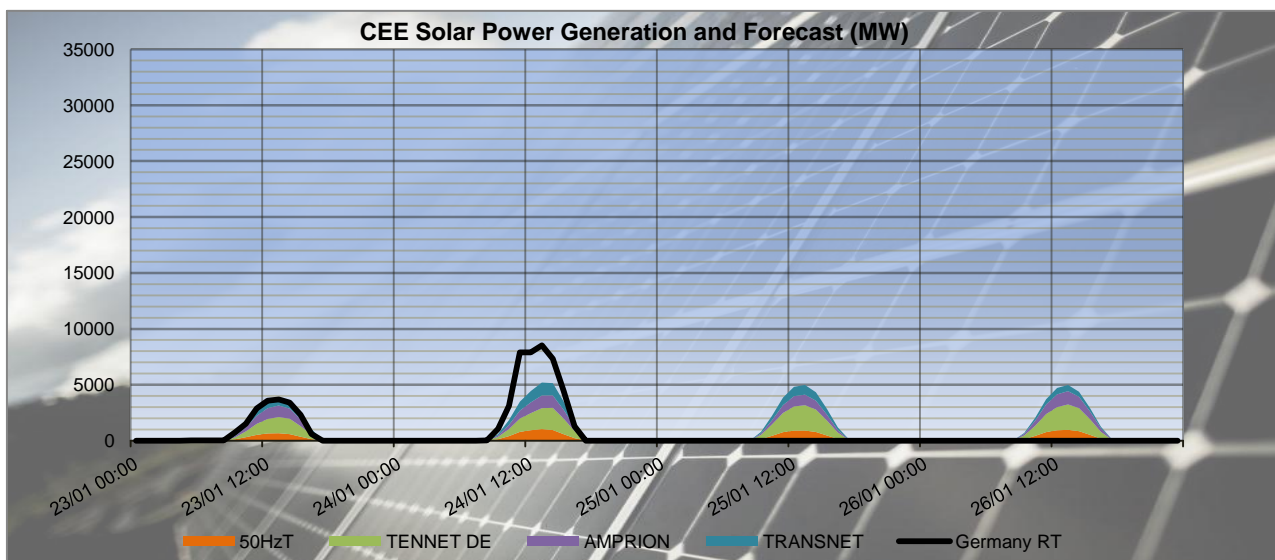
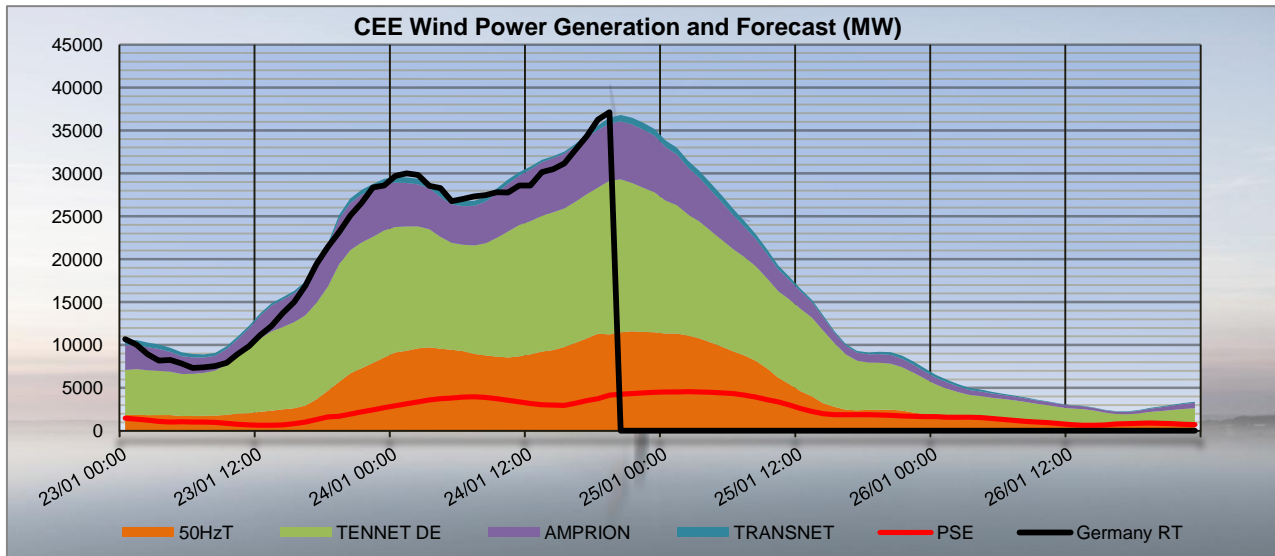
PST taps in DACF	Zandvliet 1	12	12	12	12	6	6	6	6	6	6	6	6	6
	Zandvliet 2	12	12	12	12	6	6	6	6	6	6	6	6	6
	Van Eyck 1	15	15	15	15	15	15	15	15	15	15	15	15	15
	Van Eyck 2	15	15	15	15	15	15	15	15	15	15	15	15	15
	Average	14	14	14	14	11	11	11	11	11	11	11	11	11

CREOS PST in DACF	Schiffange	17	17	17	17	17	17	17	17	17	17	17	17	17
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### Proposal for real time after D-1 studies

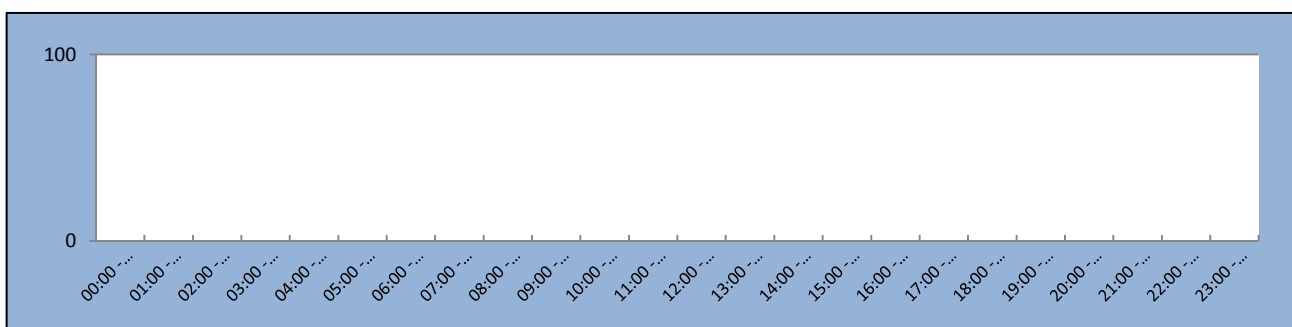
Timestamps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PSTs																								
Zandvliet PST 1	[1;35]	12	12	12	12	12	12	12	12	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Zandvliet PST 2	[1;35]	12	12	12	12	12	12	12	12	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Van Eyck PST 1	[1;35]	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Van Eyck PST 2	[1;35]	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Schiffange PST 1	[1;35]	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17

## CEE Renewable Power Generation & Forecast

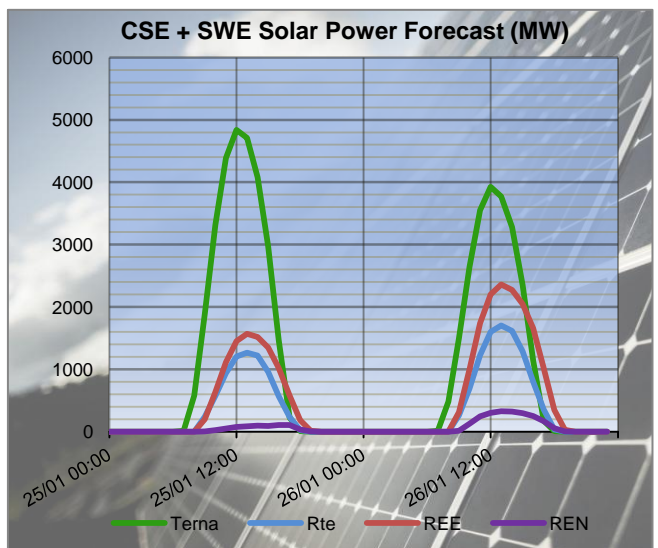
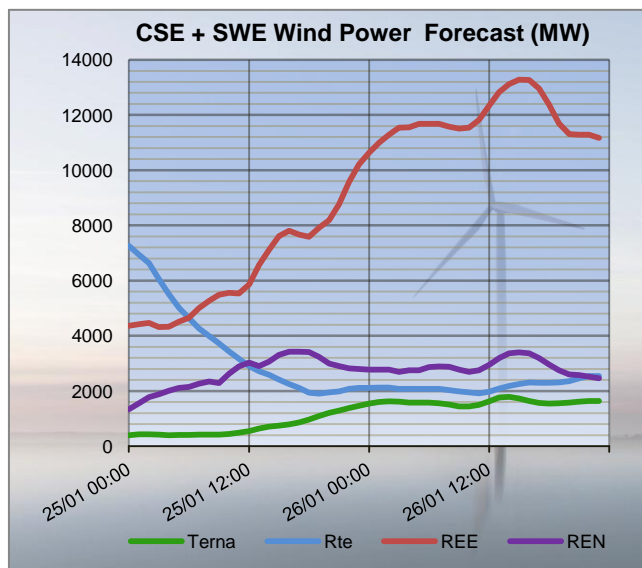
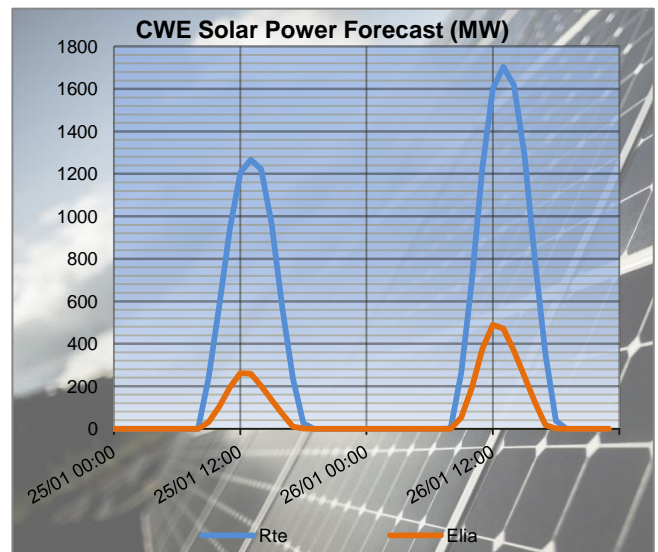
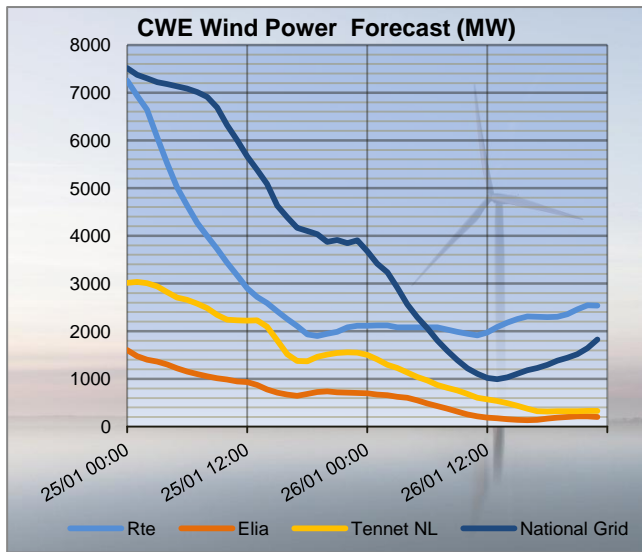


The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

## 50HzT Preventive Redispatch



## CWE, CSE & SWE Renewable Power Forecast (D-1 and D-2)



The charts above show the latest wind and solar generation forecasts for D-1 and D-2 for all the European TSOs in CWE, CSE and SWE with a significant installed capacity. Source: Meteologica



## RTE flows on cross-border lines

With last provided tap position on Belgian PSTs:

				03:30			07:30			10:30			12:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	209	92	-117	46	-67	-113	-73	-177	-104	-30	-220	-190
FR	BE	MONT ST MARTIN	AUBANGE	174	114	-60	-16	18	34	-25	-13	12	6	0	-6
FR	BE	MOULAIN	AUBANGE	172	115	-57	-2	31	33	-11	0	11	21	15	-6
FR	BE	AVELIN	AVELGEM	466	423	-43	338	225	-113	157	157	0	82	70	-12
FR	BE	MASTAING	AVELGEM	295	262	-33	396	303	-93	324	305	-19	278	256	-22
FR	BE	CHOOZ	MONCEAU	137	123	-14	158	149	-9	124	147	23	140	135	-5
FR	DE	MUHLBACH	EICHSTETTEN	329	616	287	322	575	253	141	394	253	34	364	330
FR	DE	VOGELGRUN	EICHSTETTEN	49	109	60	17	99	82	25	91	66	-2	77	79
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	534	504	-30	295	325	30	244	236	-8	204	208	4
FR	DE	VIGY	ENSDORF 2	590	586	-4	234	309	75	170	199	29	116	165	49

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	343	152	-191	-166	-360	-194	-78	-211	-133
FR	BE	MONT ST MARTIN	AUBANGE	81	71	-10	-28	-68	-40	-28	-27	1
FR	BE	MOULAIN	AUBANGE	91	82	-9	-13	-51	-38	-12	-10	2
FR	BE	AVELIN	AVELGEM	691	661	-30	-219	-119	100	280	365	85
FR	BE	MASTAING	AVELGEM	585	553	-32	154	213	59	300	347	47
FR	BE	CHOOZ	MONCEAU	228	223	-5	140	134	-6	181	171	-10
FR	DE	MUHLBACH	EICHSTETTEN	150	462	312	-220	96	316	108	283	175
FR	DE	VOGELGRUN	EICHSTETTEN	62	122	60	-57	33	90	4	44	40
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	523	418	-105	39	-16	-55	75	41	-34
FR	DE	VIGY	ENSDORF 2	473	395	-78	-87	-115	-28	-12	-33	-21

				03:30			07:30			10:30			12:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	449	386	-63	351	436	85	294	315	21	264	297	33
FR	CH	MAMBELIN	BASSECCOURT	16	165	149	-124	32	156	-94	24	118	-136	15	151
FR	CH	SIERENTZ	BASSECCOURT	294	395	101	317	390	73	280	322	42	298	342	44
FR	CH	BOIS TOLLLOT	ROMANEL	292	165	-127	24	-139	-163	19	-97	-116	130	-97	-227
FR	CH	SIERENTZ	LAUFENBURG	375	494	119	265	298	33	187	265	78	169	277	108
FR	CH	CORNIER	RIDDES	35	60	25	-45	-25	20	-23	-1	22	-34	-9	25
FR	CH	CORNIER	ST TRIPHON	6	12	6	-52	-34	18	-12	-6	6	-26	-25	1
FR	CH	PRESSY	VALLORCINES	-49	-44	5	-209	-178	31	-175	-117	58	-136	-138	-2
FR	CH	BOIS TOLLLOT	VERBOIS	128	158	30	182	203	21	259	256	-3	239	247	8
FR	CH	GENISSIAT	VERBOIS	218	211	-7	159	139	-20	187	164	-23	192	156	-36
FR	CH	GENISSIAT	VERBOIS	218	211	-7	159	139	-20	187	164	-23	192	156	-36
FR	IT	ALBERTVILLE	RONDISSONE	1012	916	-96	1006	899	-107	1074	986	-88	1038	931	-107
FR	IT	ALBERTVILLE	RONDISSONE	1012	916	-96	1006	899	-107	1075	985	-90	1038	931	-107
FR	IT	MENTON	CAMPOROSSO	252	194	-58	151	206	55	156	206	50	153	195	42
FR	IT	VILLARODIN	VENAUS	634	686	52	784	805	21	854	853	-1	781	811	30

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	253	251	-2	81	106	25	347	289	-58
FR	CH	MAMBELIN	BASSECCOURT	-24	66	90	-247	-131	116	-87	-7	80
FR	CH	SIERENTZ	BASSECCOURT	236	299	63	312	355	43	416	466	50
FR	CH	BOIS TOLLLOT	ROMANEL	-78	-32	46	-89	-173	-84	188	51	-137
FR	CH	SIERENTZ	LAUFENBURG	151	230	79	14	84	70	273	322	49
FR	CH	CORNIER	RIDDES	-48	11	59	-68	-56	12	4	20	16
FR	CH	CORNIER	ST TRIPHON	-26	-8	18	-67	-73	-6	-28	-25	3
FR	CH	PRESSY	VALLORCINES	-195	-136	59	-227	-214	13	-93	-77	16
FR	CH	BOIS TOLLLOT	VERBOIS	283	235	-48	219	198	-21	176	188	12
FR	CH	GENISSIAT	VERBOIS	190	172	-18	141	111	-30	193	172	-21
FR	CH	GENISSIAT	VERBOIS	190	172	-18	141	111	-30	193	172	-21
FR	IT	ALBERTVILLE	RONDISSONE	1052	1001	-51	948	862	-86	986	892	-94
FR	IT	ALBERTVILLE	RONDISSONE	1052	1000	-52	949	847	-102	987	892	-95
FR	IT	MENTON	CAMPOROSSO	149	196	47	150	208	58	141	199	58
FR	IT	VILLARODIN	VENAUS	859	974	115	858	967	109	704	760	56

## N state flows at 10:30 and 19:30

The I<sub>max</sub> and load values in the table below are extracted from the merged TSOs' DACF.

TSO	Line (380 kV)	10:30		19:30	
		I <sub>max</sub> (A)	% of I <sub>max</sub>	I <sub>max</sub> (A)	% of I <sub>max</sub>
ELIA	Champion - Gramme (32)	2448	47	2448	51
	Doel - Mercator (51)	2239	30	2239	32
	Doel - Mercator (52)	2239	30	2239	32
	Doel - Mercator (54)	2448	30	2448	32
	Doel - Zandvliet (25)	2237	6	2349	5
	Mercator - Horta (73)	2569	19	2569	27
	Courcelles - Gramme (31)	2273	54	2349	56
	Mercator - Rodenhuijze/Horta (74)	2288	24	2349	31
RTE	Attaques - Warande 2	3780	54	3780	57
	Avelin - Gavrelle	2622	24	2622	39
	Avelin - Warande	3458	14	3458	10
	Lonny - Seuil	4149	18	4149	24
	Mandarins - Warande 1	3780	51	3780	54
	Muhlbach - Scheer	2598	22	2598	15
	Revigny - Vigy	2596	24	2596	35
	Warande - Weppes	3458	20	3458	16

X < 50 % of I<sub>max</sub>
 50 ≤ X < 75 % of I<sub>max</sub>
 X ≥ 75 % of I<sub>max</sub>

TSO	Voltage	Line (380 kV)	10:30		19:30	
			I <sub>max</sub> (A)	% of I <sub>max</sub>	I <sub>max</sub> (A)	% of I <sub>max</sub>
50 HzT	380 kV	Eisenach - Mecklar (450-2)	2520	9	2520	12
		Hagenwerder - Mikulowa (567)	2520	26	2520	13
		Hagenwerder - Mikulowa (568)	2520	26	2520	13
		Remptendorf - Redwitz (413)	3370	48	3370	44
		Remptendorf - Redwitz (414)	3370	48	3370	44
		Röhrsdorf - Hradec (445)	2520	47	2520	29
		Röhrsdorf - Hradec (446)	2520	47	2520	29
		Vieselbach - Mecklar (449-1)	2520	10	2520	16
		Wolmirstedt - Helmstedt (491-1)	2400	24	2400	13
		Wolmirstedt - Helmstedt (492-2)	2400	24	2400	13
	220 kV	Vierraden - Krajnik (507)	1307	0	1307	0
		Vierraden - Krajnik (508)	1307	0	1307	0

X < 50 % of I<sub>max</sub>
 50 ≤ X < 75 % of I<sub>max</sub>
 X ≥ 75 % of I<sub>max</sub>

## Special topologies at 10:30 and 19:30

Nodes in North area				
			10:30	19:30
380 kV	Elia	Doel	1	1
		Avelgem	1	1
	Rte	Warande	1	1
		Cergy	2	2
		Terrier	1	1
		Plessis Gassot	1	1
		Mery/Seine	2	2
		Muhlbach	2	2
		Vigy	2	2
	Transnet bw	Eichstetten	1	1
	Amprion	Uchtelfangen	1	1
	Tennet DE	Redwitz	1	1
	50 HzT	Remptendorf	1	1
		Wolmirstedt	1	1
	CEPS	Hradec Vychod	1	1
220 kV	50 HzT	Pasewalk	1	1

## North analyses results

Security analyses have been performed for 24 timestamps.

All remedial actions have been agreed with concerned TSO during the day ahead process.

### Constraints on Elia, RTE (North) and 50HzT 400kV grids and tie-lines

TSO	Validity	Contingency				Constraint					Timestamps of max
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code	
50HzT	16-17	400	Hradec	Röhrsdorf	N-1	104%	400	Röhrsdorf	PST		16:30
<b>Curative Action:</b> Decrease 4 taps on Röhrsdorf PSTs - 99% remaining											

### Constraints greater than 100% on NL + Amprion 400kV grids and greater than 120% on DE, CZ, PL and SK 400kV grids

TSO	Validity	Contingency				Constraint					Timestamps of max
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code	
Tennet NL	3-6	400	Diele	Meeden	axis	115%	400	Diele	Meeden	remaining	05:30
<b>Preventive Action:</b> Decrease 2 taps on Meeden PSTs - 91% remaining											
Amprion / Tennet DE	7-15	400	Hanekenfarh	Meppen	N-1	124%	400	Hanekenfahr	Dorpen West		23:30
<b>Preventive Action:</b> Wind curtailment											
Tennet NL	8-15	400	Ens	Lelystad	axis	115%	400	Ens	Lelystad	remaining	10:30
<b>Preventive Action:</b> Lelystad in 2 nodes, Tennet NL confirms no other measures available for this constraint and they will manage it in real time with redispatching.											

Contingency				Constraint					Comments
U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code	
No constraint detected									

## 50HzT DC loopflows sensitivity

Vierraden-Krajnik 220kV axis in long term outage till 2018.

## South analyses results

Security analyses have been performed for these 2 timestamps:

- Off-peak period (23:00 – 07:00): **06:30**
- Peak period (07:00 – 23:00): **16:30**

Adaptations made on merged DACFs:

### Off-peak:

- SI → IT physical flow adapted to the target flow : **800 MW**
- Mendrisio-Cagno flow adapted to the schedule : **195 MW**
- PST of Lienz adapted to **120 MW**
- PST of Camporosso adapted to **200 MW**
- PST of Rondissone on max. tap position

### Peak:

- SI → IT physical flow adapted to the target flow : **800 MW**
- Mendrisio-Cagno flow adapted to the schedule : **200 MW**
- PST of Lienz adapted to **120 MW**
- PST of Camporosso adapted to **200 MW**
- PST of Rondissone on max. tap position

## Special topologies

Nodes in South area				
			Off Peak	Peak
380 kV	Swissgrid	Sils	1	1
		Robbia	2	2
	Rte	Génissiat	1	1
		Albertville	1	1
		Grande Ile	2	2
	Terna	Turbigo	1	1
		Baggio	1	1
		Bovisio	1	1
		Ostiglia	1	1

## N state flows Off-Peak & Peak

The I<sub>max</sub> and load values in the table below are extracted from the **adapted** merged TSOs' DACF.

TSO	Voltage	Line (380 kV)	Off Peak		Peak	
			I <sub>max</sub> (A)	% of I <sub>max</sub>	I <sub>max</sub> (A)	% of I <sub>max</sub>
Terna	380 kV	Albertville - Rondissone 1	2370	66	2370	68
		Albertville - Rondissone 2	2370	66	2370	68
		Bulciago - Soazza	2300	28	2300	31
		Cagno - Mendrisio	855	39	855	39
		Musignano - Lavorgo	2270	44	2270	42
		Redipuglia - Divaca	2700	34	2700	34
		Robbia - San Fiorano	2530	43	2530	46
		Robbia - Gorlago	2530	42	2530	49
		Venaus - Villarodin	2715	45	2715	60
	220 kV	Airolo - Ponte	900	0	900	0
		Lienz - Soverzene	750	42	750	39
		Menton - Campo Rosso	1165	43	1165	42
		Padriciano - Divaca	960	56	960	41
		Riddes - Avise	1010	27	1010	39
		Riddes - Valpelline	1010	47	1010	45
		Serra - Pallanzeno	900	50	900	40

For Terna:

<div></div>	X < 50 % of I <sub>max</sub>	<div></div>	50 ≤ X < 75 % of I <sub>max</sub>	<div></div>	X ≥ 75% of I <sub>max</sub>
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### Sensitivity coefficients for the Pentalateral instruction

The amount of the control program curtailment on peak and off-peak can be calculated thanks to the sensitivities in the table below:

		FR → IT	CH → IT	AT → IT	SI → IT
Off Peak	Initial physical flows on adapted base case	3106	3402	128	862
	Compensation ratio (calculated from NTC)	40%	48%	4%	9%
	Pentalateral impact on physical flows	-25%	-56%	-4%	-15%
Peak	Initial physical flows on adapted base case	3436	3572	118	806
	Compensation ratio (calculated from NTC)	39%	48%	4%	9%
	Pentalateral impact on physical flows	-26%	-56%	-4%	-15%

## OFF PEAK

### Off Peak constraints on APG, Eles, RTE (South), Swissgrid and Terna 400kV grids and tie-lines

	TSO	Contingency				Constraint				
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code
Off-Peak	Rte	380	Albertville	Grand Ile	N-2	100%(1')	380	Albertville	Grand Ile	3
		<p><b>Preventive action:</b> 2-node topology in Chaffard (isolate busbar 1B) 113% (20') remaining on Albertville - Grand Ile</p> <p><b>Curative action:</b> 2-node topology in Albertville (Isolate busbar 1A) 93% remaining on Albertville - Grand Ile 100% (20') on Albertville Longefan 1 Increase 4 taps on La Praz PST 93% remaining on Albertville - Grand Ile 96% on Albertville Longefan 1</p>								

Security analysis restarted with preventive actions mentioned above

	TSO	Contingency				Constraint				
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code
Off-Peak	Rte / Terna	380	Albertville	Rondissone	N-2	100%(10')	380	La Praz	PST	
		<p><b>Curative action:</b> Automatic tap changer to neutral position on La Praz PST 103% (20') remaining on La Praz PST Increase 5 extra taps on the La Praz PST 97% remaining on the La Praz PST</p>								

## PEAK

### Peak constraints on APG, Eles, RTE (South), Swissgrid and Terna 400kV grids and tie-lines

	TSO	Contingency				Constraint				
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code
Peak	Rte	380	Albertville	Grand Ile	N-2	102%(1')	380	Albertville	Grand Ile	3
		<p><b>Preventive action:</b> 2-node topology in Chaffard (isolate busbar 1B) 117% (20') remaining on Albertville - Grand Ile</p> <p><b>Curative action:</b> 2-node topology in Albertville (Isolate busbar 1A) 96% remaining on Albertville - Grand Ile</p>								

Security analysis restarted with preventive actions mentioned above

	TSO	Contingency				Constraint				
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code
Peak	Rte / Terna	380	Albertville	Rondissone	N-2	104%(10')	380	La Praz	PST	
		<p><b>Curative action:</b> Automatic tap changer to neutral position on La Praz PST 109% (20') remaining on La Praz PST Increase 7 extra taps on the La Praz PST 99% remaining on La Praz PST</p>								

### **Final PSTs settings**

The tables below present the tap positions and the physical flows on different PSTs with the adaptations described at the top of the page (IT-SI target flow...) and preventive actions (before Pentalateral reduction).

PST	Off Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	1	839
Rondissone 1 (1/33)	33	1024
Rondissone 2 (1/33)	33	1025
Camporosso (-32/32)	0	203
Lienz (-32/32)	6	130
Padriciano (1/33)	1	215
Divaca (-32/32 each)	20	650

PST	Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	1	884
Rondissone 1 (1/33)	33	1054
Rondissone 2 (1/33)	33	1054
Camporosso (-32/32)	6	199
Lienz (-32/32)	-12	119
Padriciano (1/33)	13	158
Divaca (-32/32 each)	6	649

## **Conclusion**

CWE: Critical constraint detected in Netherlands to be monitored and managed in real time with redispatching.

CEE: No critical constraint detected.

CSE: No critical constraints detected.