

<p><b><u>CORESO Engineers</u></b></p> <p><b><u>North :</u></b> SANTOS Eduardo HOYAL Matias</p> <p><b><u>South :</u></b> BOYER Jonathan</p>	<p><b>Day Ahead report for</b></p> <p><b>09 January 2018</b></p>
<p><b>Security Levels:</b></p> <p><b>CWE: No critical constraint detected in the interest area, however high overloads on Tennet NL, Amprion and TenneT DE requiring redispatch. Zandvliet PSTs on tap 6/6 due to TenneT NL request to manage very high N -&gt; S flows.</b></p> <p><b>CEE: Critical constraints detected, needing outage cancellations and preventive redispatch due to very high wind infeed in Germany.</b></p> <p><b>CSE: Constraints detected require coordination.</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

Constraints on ELIA 220/150kV grid at 10:30

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 DACH					
ELIA			Elia	Doel	Pmax (MW)	1000	1	1900
						450	2	
Peak load [MW]	11500	18:00		Tihange		1000	2	2900
						450	2	
Generation Margin	Sufficient			Coo		230	3	1170
						160	3	
			50HzT	Rostock	Pmax (MW)	530	0	0
				Janschwalde		500	5	2500
				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]	76600	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]	48400	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]	46 100	17:30						
			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.

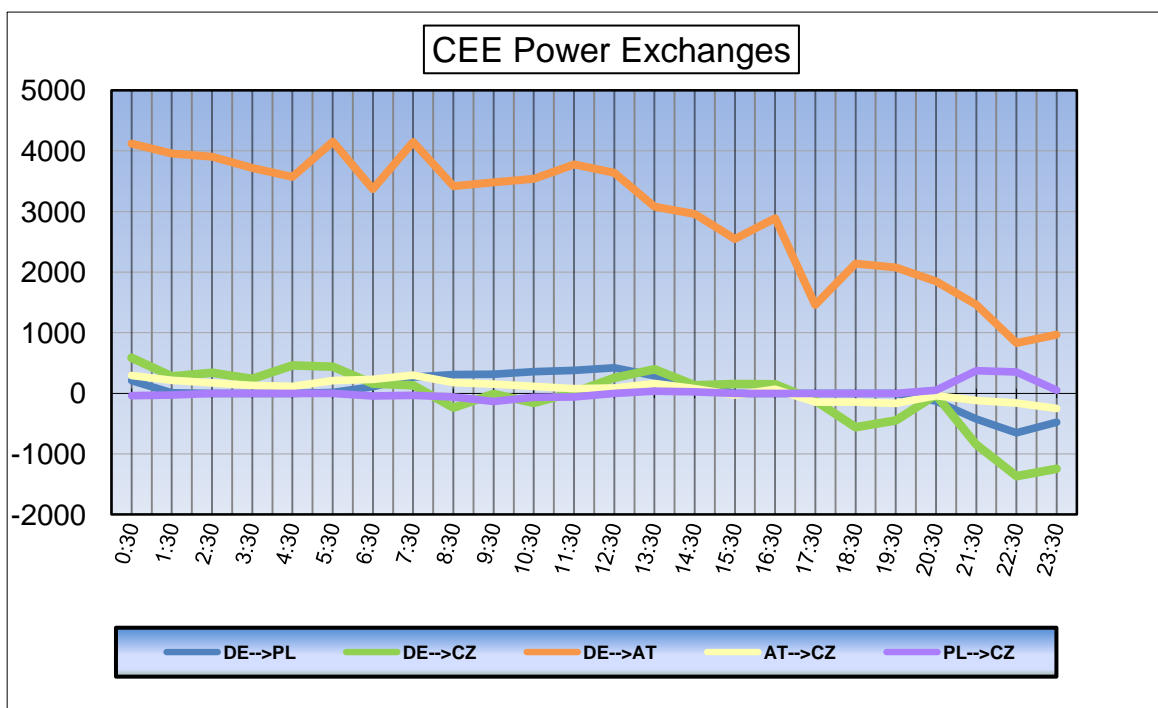
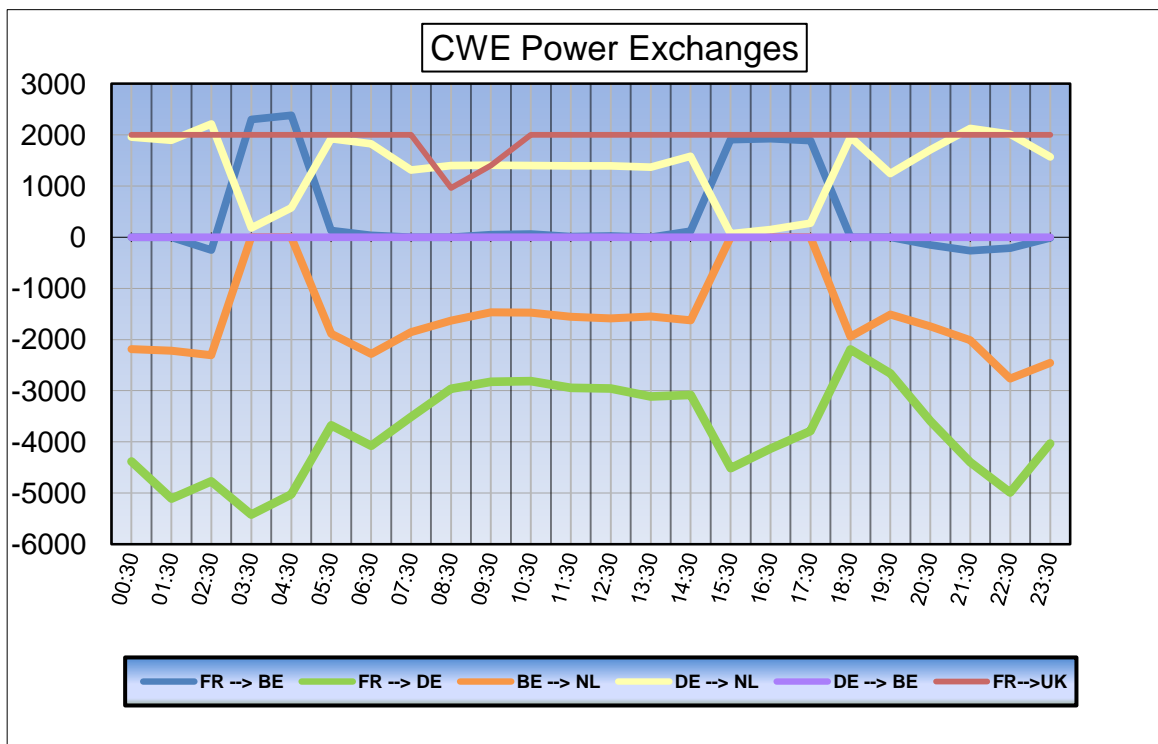
**Red:** Insufficient margin available. High risk for need of inter-TSO solicitation due to margin issues.

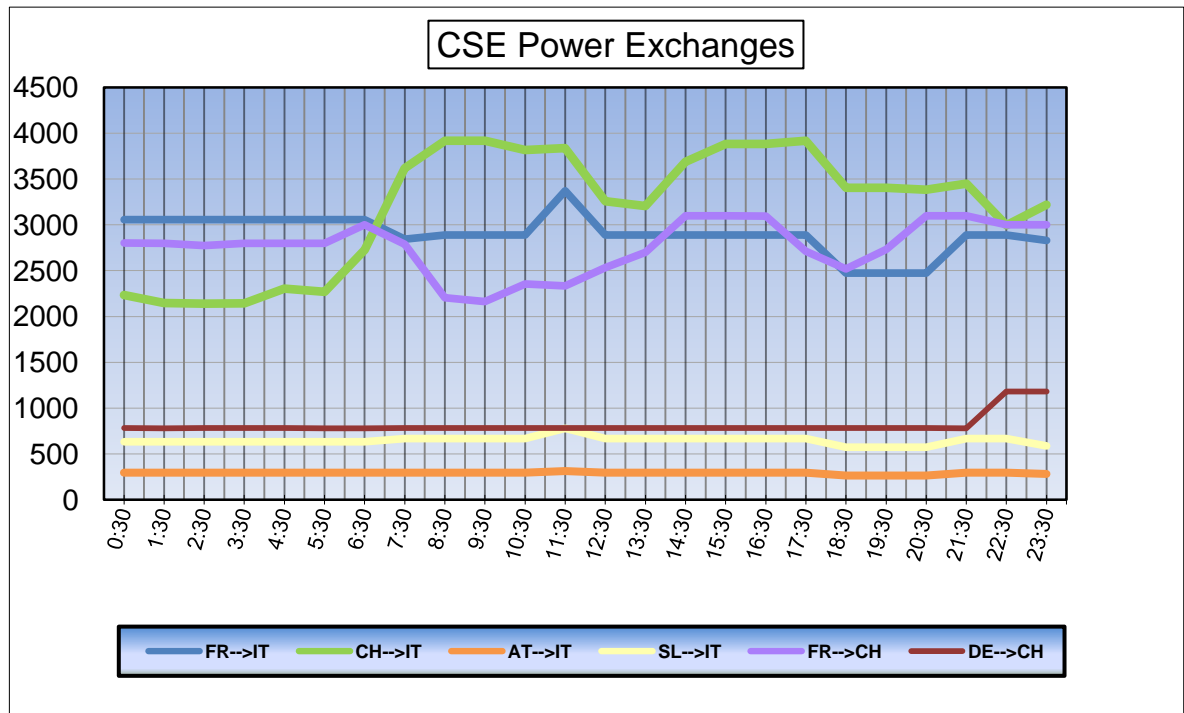
### Comments:

## Outages table

OUTAGES						
Owner	Type of element	Line name	start	end	Comments	
50HzT	Hydro.Gen	MARKERSBACH _ Unit D 400 kV	28/09/2017	27/04/2018	160 MW	
50HzT	Line	CROSSEN _ RÖHRSDORF 211 220 kV	08/01/2018	12/01/2018	Alternating	
50HzT	Line	CROSSEN _ RÖHRSDORF 212 220 kV	08/01/2018	12/01/2018	Alternating	
50HzT	Line	EULA _ Wolframhausen 357 220 kV	06/10/2017	16/03/2018		
50HzT	Line	GORRIES _ KRUMMEL 419 400 kV	09/01/2018	09/01/2018		
50HzT	Line	HAMBURG Nord _ HAMBURG Ost 961 400 kV	08/01/2018	12/01/2018		
50HzT	Line	LUBMIN _ LUDERSHAGEN 317-27 225 kV	08/01/2018	10/01/2018		
50HzT	Line	LUBMIN _ WIKINGER 281 220 kV	26/09/2017	31/01/2018		
50HzT	Line	RAGOW _ Förderstedt 531 400 kV	02/01/2018	14/01/2018		
50HzT	Line	RAGOW _ FORDERSTEDT 532 380 kV	02/01/2018	14/01/2018		
50HzT	Line	WOLMIRSTEDT _ WUSTERMARK 494 400 kV	09/01/2018	09/01/2018		
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		
APG	Line	TAUERN _ PST 220 kV	14/12/2017	15/01/2018		
CEPS	Line	DASNY _ KOCIN 473 400 kV	08/01/2018	26/01/2018		
CREOS	Line	BERTRANGE _ SCHIFFLANGE West 220 kV	08/01/2018	02/03/2018		
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	Nuc.Gen	DOEL _ Unit 3 (1000MW) 400 kV	23/09/2017	16/04/2018	Forced outage	
PSE	Fossil.Gen	TUROW _ Unit 2 225 kV	01/03/2017	12/01/2018		
PSE	Line	POLANIEC _ TARNOW 400 kV	08/01/2018	12/01/2018		
PSE	Line	TUCZNAWA _ RZESZOW 400 kV	08/01/2018	12/01/2018		
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	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	
TENNET DE	Line	BORKEN _ BERGHAUSEN 1 400 kV	09/01/2018	09/01/2018		
TENNET DE	Line	TWISTETAL _ BORKEN 3 400 kV	16/05/2017	11/10/2018		
TENNET DE	Line	WURGASSEN _ GROHNDE 2 400 kV	08/01/2018	12/01/2018		
TENNET NL	Line	HENGEL _ ZWOLLE WT 400 kV	08/01/2018	12/01/2018		
TERNA	Line	PIAN CAMUNO _ S.FIORANO 358 400 kV	05/01/2018	31/01/2018	Forced outage	
TransnetBW	Line	DAXLANDEN _ PHILIPPSBURG GE 400 kV	08/01/2018	12/01/2018		
TransnetBW	Line	DAXLANDEN _ PHILIPPSBURG RT 400 kV	09/01/2018	12/01/2018		
TransnetBW	Line	GOLDSHOFE _ KUPFERZELL GN 400 kV	03/01/2018	10/01/2018		

## Exchange program forecasts





## ELIA expected flows & PSTs tap position

		Node 1	Node 2	Order	02:30	03:30	04:30	07:30	10:30	12:30	13:30	16:30	17:30	19:30	20:30	23:30
BE	FR	ACHENE	LONNY	380.19	397	181	124	461	451	394	414	280	266	375	438	311
BE	FR	AUBANGE	MONT ST MARTIN	220.51	-5	-62	-82	-3	-4	-44	-30	-60	-50	-40	7	-5
BE	FR	AUBANGE	MOULAIN	220.51	-12	-67	-91	-21	-23	-58	-39	-62	-59	-48	-8	-14
BE	FR	AVELGEM	AVELIN	380.80	297	26	-73	515	485	475	458	223	150	446	327	73
BE	FR	AVELGEM	MASTAING	380.79	-14	-130	-176	-5	-39	-34	-44	-132	-185	-51	-86	-168
BE	FR	MONCEAU	CHOOZ	220.48	-113	-144	-154	-65	-64	-69	-64	-86	-108	-65	-85	-158
BE	NL	VAN EYCK 1	MAASBRACHT	380.27	-844	-742	-725	-809	-740	-720	-711	-675	-661	-680	-717	-824
BE	NL	VAN EYCK 2	MAASBRACHT	380.28	-789	-669	-622	-626	-470	-481	-458	-384	-264	-380	-458	-584
BE	NL	ZANDVLIET	BORSSELE	380.29	-493	-413	-374	-837	-803	-789	-790	-728	-711	-791	-634	-649
BE	NL	ZANDVLIET	GEERTRUIDENBERG	380.30	-364	-212	-156	-380	-291	-254	-249	-157	-132	-216	-296	-365
BE	LU	BELVAL	SCHIFFLANGE	220.511	-113	-65	-49	-87	-35	-33	-36	-139	-136	-68	-80	-55

BE	FR	TOTAL		550	-196	-452	882	806	664	695	163	14	617	593	39
BE	NL	TOTAL		-2490	-2036	-1877	-2652	-2304	-2244	-2208	-1944	-1768	-2067	-2105	-2422
BE	LU	TOTAL		-113	-65	-49	-87	-35	-33	-36	-139	-136	-68	-80	-55
TOTAL BELGIAN IMPORT/EXPORT				-2053	-2297	-2378	-1857	-1533	-1613	-1549	-1920	-1890	-1518	-1592	-2438

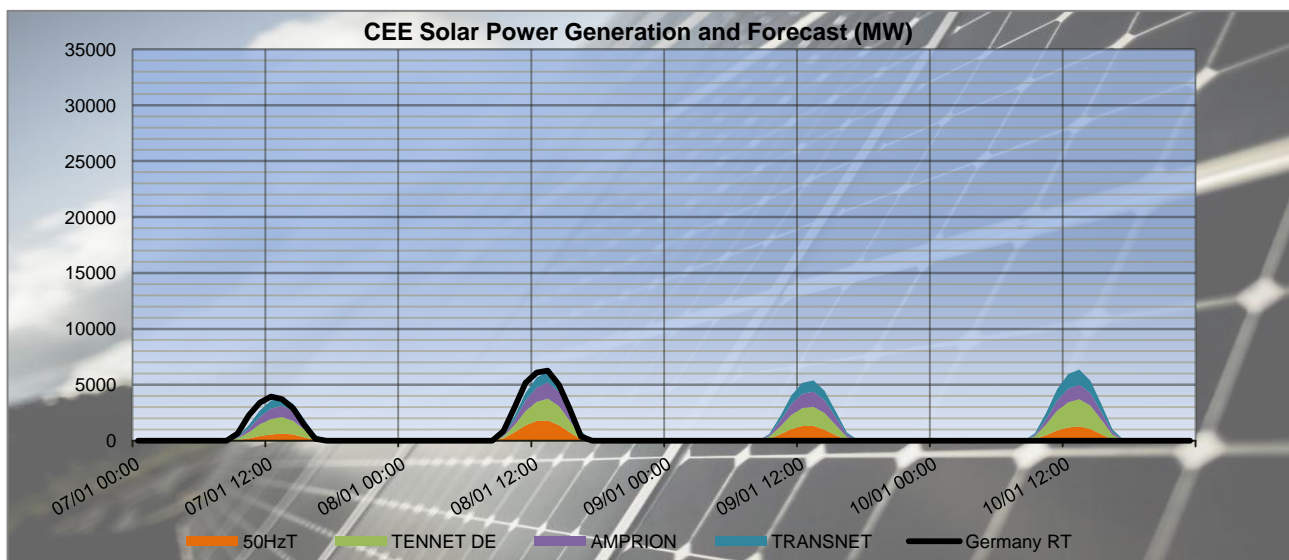
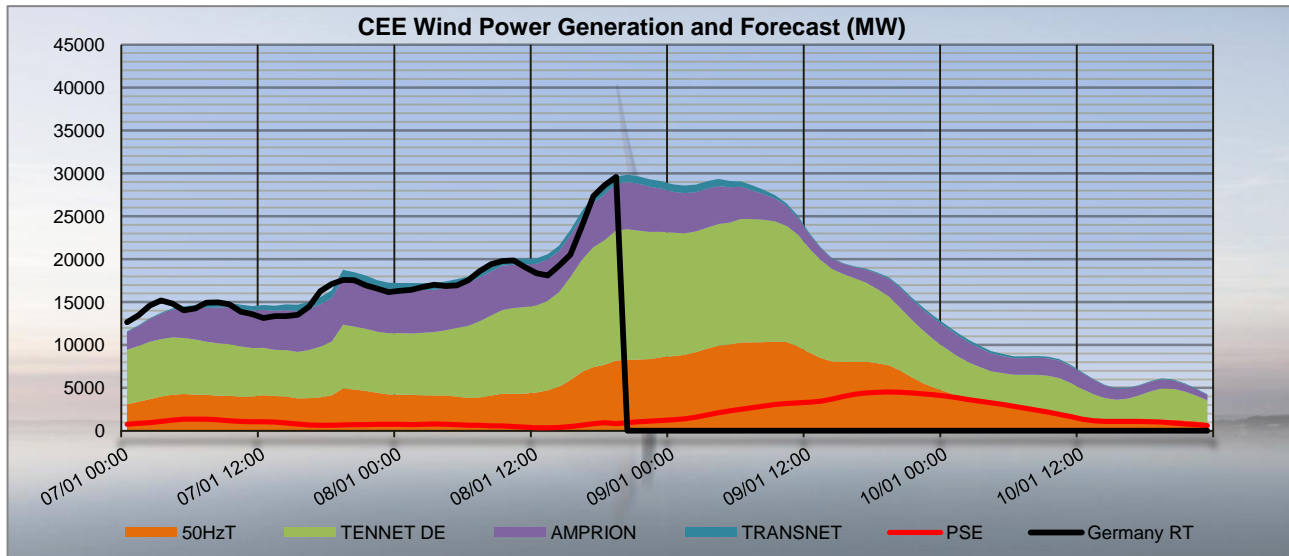
PST taps in DACF	Zandvliet 1	6	6	6	6	6	6	6	6	6	6	6	6	6
	Zandvliet 2	6	6	6	6	6	6	6	6	6	6	6	6	6
	Van Eyck 1	12	12	12	12	12	12	12	12	12	12	12	12	12
	Van Eyck 2	12	12	12	12	12	12	12	12	12	12	12	12	12
	Average	9	9	9	9	9	9	9	9	9	9	9	9	9

CREOS PST in DACF	Schiffange	15	15	15	15	15	15	15	15	15	15	15	15	15
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### Proposal for real time after D-1 studies

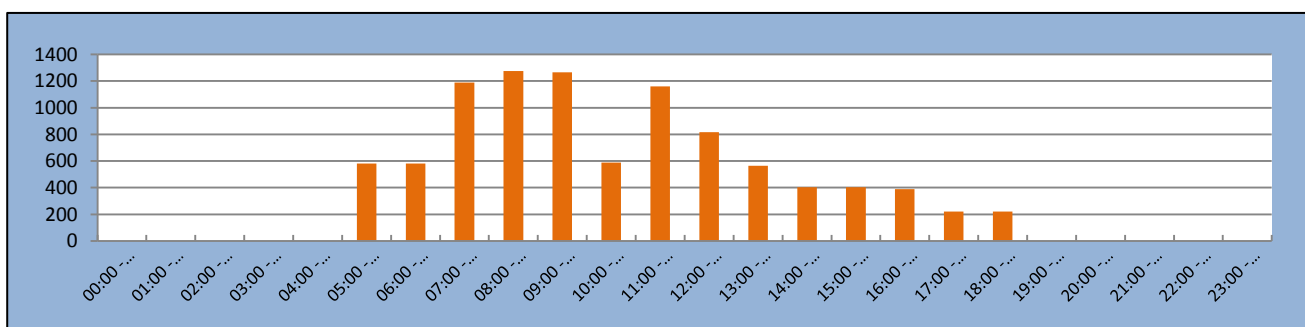
Timestamps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PSTs																								
Zandvliet PST 1	[1;35]	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Zandvliet PST 2	[1;35]	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Van Eyck PST 1	[1;35]	12	12	12	12	12	12	12	12	12	12	12	12	12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

## CEE Renewable Power Generation & Forecast

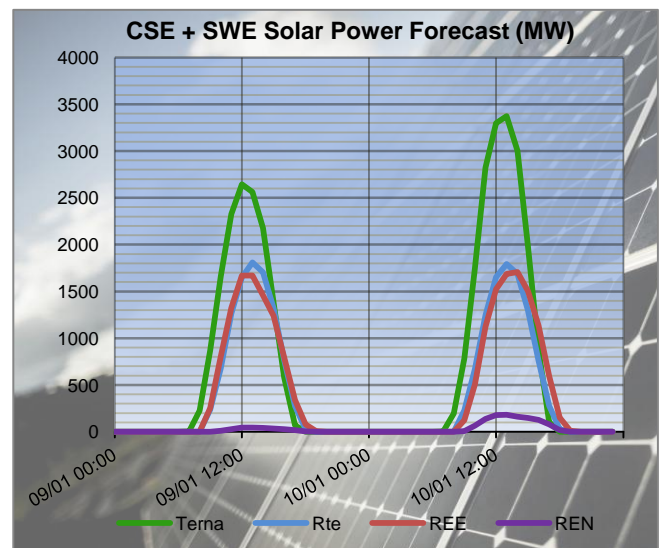
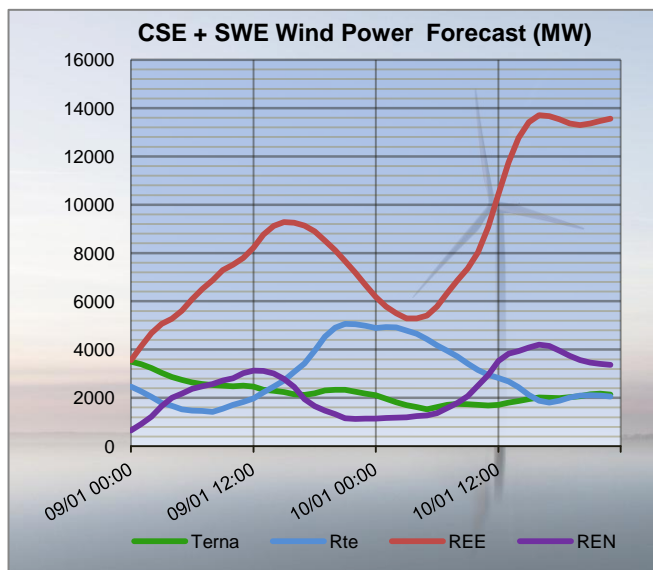
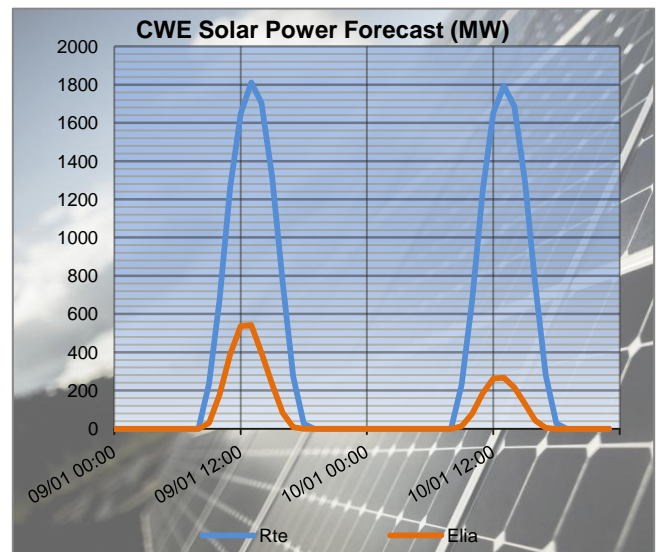
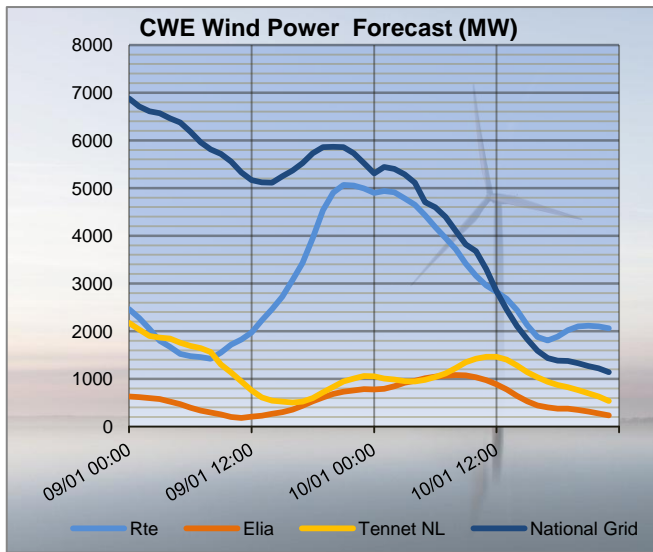


The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

## 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	131	-181	-312	-413	-461	-48	-408	-451	-43	-337	-394	-57
FR	BE	MONT ST MARTIN	AUBANGE	107	62	-45	52	3	-49	48	4	-44	81	44	-37
FR	BE	MOULAIN	AUBANGE	108	67	-41	68	21	-47	65	23	-42	93	58	-35
FR	BE	AVELIN	AVELGEM	66	-26	-92	-424	-515	-91	-429	-485	-56	-409	-475	-66
FR	BE	MASTAING	AVELGEM	185	130	-55	67	5	-62	78	39	-39	77	34	-43
FR	BE	CHOOZ	MONCEAU	162	144	-18	107	65	-42	63	64	1	78	69	-9
FR	DE	MUHLBACH	EICHSTETTEN	-141	81	222	-29	287	316	-58	273	331	-49	296	345
FR	DE	VOGELGRUN	EICHSTETTEN	-89	-45	44	-72	-19	53	-64	4	68	-73	-10	63
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	-259	-227	32	-121	-176	-55	29	-84	-113	71	-64	-135
FR	DE	VIGY	ENSDORF 2	-384	-323	61	-89	-115	-26	77	-6	-83	121	19	-102

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	-230	-266	-36	-313	-375	-62	-271	-311	-40
FR	BE	MONT ST MARTIN	AUBANGE	80	50	-30	8	40	32	-15	5	20
FR	BE	MOULAIN	AUBANGE	88	59	-29	18	48	30	-5	14	19
FR	BE	AVELIN	AVELGEM	-112	-150	-38	-370	-446	-76	-175	-73	102
FR	BE	MASTAING	AVELGEM	219	185	-34	106	51	-55	118	168	50
FR	BE	CHOOZ	MONCEAU	147	108	-39	156	65	-91	142	158	16
FR	DE	MUHLBACH	EICHSTETTEN	72	328	256	37	252	215	42	62	20
FR	DE	VOGELGRUN	EICHSTETTEN	-59	28	87	-65	6	71	-62	-9	53
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	56	26	-30	-76	-64	12	-367	-191	176
FR	DE	VIGY	ENSDORF 2	107	117	10	-21	23	44	-529	-327	202

				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	163	321	158	108	169	61	51	115	64	63	136	73
FR	CH	MAMBELIN	BASSEECOURT	-280	-188	92	-374	-257	117	-348	-210	138	-354	-214	140
FR	CH	SIERENTZ	BASSEECOURT	436	462	26	389	448	59	323	413	90	341	431	90
FR	CH	BOIS TOLLOT	ROMANEL	115	157	42	89	73	-16	94	51	-43	93	82	-11
FR	CH	SIERENTZ	LAUFENBURG	220	276	56	35	104	69	-3	27	30	33	73	40
FR	CH	CORNIER	RIDDES	-42	11	53	-31	-1	30	-29	-2	27	-36	0	36
FR	CH	CORNIER	ST TRIPHON	-50	6	56	-54	-13	41	-67	-14	53	-75	-11	64
FR	CH	PRESSY	VALLORCINES	-144	-75	69	-121	-90	31	-126	-77	49	-141	-79	62
FR	CH	BOIS TOLLOT	VERBOIS	136	153	17	132	210	78	119	208	89	132	227	95
FR	CH	GENISSIAT	VERBOIS	121	135	14	121	160	39	114	153	39	121	169	48
FR	CH	GENISSIAT	VERBOIS	121	135	14	122	160	38	114	153	39	121	169	48
FR	IT	ALBERTVILLE	RONDISSONE	836	757	-79	959	809	-150	1036	843	-193	975	783	-192
FR	IT	ALBERTVILLE	RONDISSONE	836	711	-125	959	766	-193	1037	799	-238	975	754	-221
FR	IT	MENTON	CAMPOROSSO	253	142	-111	146	160	14	142	159	17	148	143	-5
FR	IT	VILLARODIN	VENAUS	-12	52	64	321	326	5	498	494	-4	346	254	-92

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	142	257	115	142	227	85	190	194	4
FR	CH	MAMBELIN	BASSEECOURT	-316	-181	135	-306	-202	104	-312	-286	26
FR	CH	SIERENTZ	BASSEECOURT	367	436	69	396	452	56	451	440	-11
FR	CH	BOIS TOLLOT	ROMANEL	127	82	-45	86	81	-5	77	40	-37
FR	CH	SIERENTZ	LAUFENBURG	82	79	-3	129	103	-26	272	116	-156
FR	CH	CORNIER	RIDDES	-36	-4	32	-41	4	45	-75	-35	40
FR	CH	CORNIER	ST TRIPHON	-78	-30	48	-75	-16	59	-83	-55	28
FR	CH	PRESSY	VALLORCINES	-144	-93	51	-138	-71	67	-170	-134	36
FR	CH	BOIS TOLLOT	VERBOIS	134	198	64	147	204	57	131	163	32
FR	CH	GENISSIAT	VERBOIS	127	151	24	130	158	28	112	115	3
FR	CH	GENISSIAT	VERBOIS	127	151	24	130	158	28	112	115	3
FR	IT	ALBERTVILLE	RONDISSONE	1037	861	-176	914	739	-175	883	684	-199
FR	IT	ALBERTVILLE	RONDISSONE	1038	818	-220	914	709	-205	884	653	-231
FR	IT	MENTON	CAMPOROSSO	142	155	13	153	158	5	160	148	-12
FR	IT	VILLARODIN	VENAUS	408	343	-65	255	248	-7	173	132	-41

## 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	44	2448	41
	Doel - Mercator (51)	2239	41	2239	40
	Doel - Mercator (52)	2239	41	2239	40
	Doel - Mercator (54)	2448	41	2448	40
	Doel - Zandvliet (25)	2349	24	2349	21
	Mercator - Horta (73)	2569	43	2569	42
	Courcelles - Gramme (31)	2349	48	2349	45
	Mercator - Rodenhuize/Horta (74)	2349	49	2349	47
RTE	Attaques - Warande 2	3780	58	3780	57
	Avelin - Gavrelle	2622	53	2622	48
	Avelin - Warande	3458	7	3458	8
	Lonny - Seuil	4149	26	4149	26
	Mandarins - Warande 1	3780	54	3780	53
	Muhlbach - Scheer	2598	25	2598	28
	Revigny - Vigy	2596	45	2596	45
	Warande - Weppes	3458	13	3458	15



X < 50 % of I<sub>max</sub>

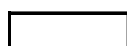


50 ≤ X < 75 % of I<sub>max</sub>



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	52	2520	44
		Hagenwerder - Mikulowa (567)	2520	19	2520	13
		Hagenwerder - Mikulowa (568)	2520	19	2520	13
		Remptendorf - Redwitz (413)	3417	62	3440	60
		Remptendorf - Redwitz (414)	3417	62	3440	60
		Röhrsdorf - Hradec (445)	2520	43	2520	34
		Röhrsdorf - Hradec (446)	2520	43	2520	34
		Vieselbach - Mecklar (449-1)	2520	53	2520	46
		Wolmirstedt - Helmstedt (491-1)	2400	35	2400	28
		Wolmirstedt - Helmstedt (492-2)	2400	35	2400	28
	220 kV	Vierraden - Krajnik (507)	1370	0	1370	0
		Vierraden - Krajnik (508)	1370	0	1370	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	1	1
		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	
50Hz	07:00 - 14:00	400	Lauchstadt	Vieselbach	Axis	108%	400	Lauchstadt	Vieselbach	Remaining	09:30
		Preventive Actions: Preventive redispatch and implement 2-nodes operation at Vieselbach => 96% remaining									
50Hz / Tennet DE	07:00 - 08:00 11:00 - 15:00	400	Döllern	Wilster	RT	109%	400	Hamburg Ost	Hamburg Nord		07:30
		Preventive Action: Cancellation of Hamburg Ost - Hamburg Nord 400kV outage (DOPT info).									
50Hz / Tennet DE	06:00 - 08:00 11:00 - 14:00	400	Streumen	Rohrsdorf	Axis	104%	400	Streumen	Rohrsdorf	Remaining	12:30
		Preventive Action: Implement 2-nodes operation at Streumen => 98% 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	08:00 - 17:00	400	Zwolle	Busbar	B	111%	400	Ens	Zwolle	1	09:30
		Preventive Action: Redispatch (DOPT info)									
TenneT NL	00:00 - 03:00 & 06:00 - 19:00	400	Lelystad	Ens	Axis	129%	400	Lelystad	Ens	Remaining	09:30
		Preventive Action: Redispatch (DOPT info)									
TenneT NL / TeneT DE / Amprion	08:00 - 14:00	400	Zwolle	Hengelo	ZT	107%	400	Hanekefahr	Dorpen West		09:30
		Preventive Action: Redispatch (DOPT info)									
TenneT NL / TeneT DE / Amprion	01:00 - 02:00 & 07:00 - 20:00	400	Diele	Dorpen West		129%	400	Rhede	Dorpen West		09:30
		Preventive Action: Redispatch (DOPT info)									
Amprion	08:00 - 11:00	400	Gronau	Hanekefahr		102%	400	Hanekefahr	Munsterland		09:30
		Preventive Action: Redispatch (DOPT info)									

### Constraints on ELIA 220/150kV grid at 10:30

Contingency				Constraint					Comments
U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code	
400	Mercator	Busbar	2A	141%	150	Lillo	Zandvliet		all day long
400	Massenhoven	Busbar	1	102%	150	Lillo	Zandvliet		09:00 - 12:00 13:00 - 15:00

## 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): **11:30**

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 : **144 MW**
- PST of Lienz adapted to **150 MW**
- PST of Camporosso adapted to **150 MW**

### Peak:

- SI → IT physical flow adapted to the target flow : **800 MW**
- Mendrisio-Cagno flow adapted to the schedule : **180 MW**
- PST of Lienz adapted to **150 MW**
- PST of Camporosso adapted to **150 MW**

## 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	<b>1</b>	<b>2</b>
		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	47	2370	57
		Albertville - Rondissone 2	2370	45	2370	55
		Bulciago - Soazza	2300	44	2300	59
		Cagno - Mendrisio	855	29	855	34
		Musignano - Lavorgo	2270	54	2270	70
		Redipuglia - Divaca	2700	34	2700	35
		Robbia - San Fiorano	2530	45	2530	62
		Robbia - Gorlago	2530	56	2530	70
		Venaus - Villarodin	2715	12	2715	24
	220 kV	Airolo - Ponte	900	22	900	15
		Lienz - Soverzene	750	48	750	51
		Menton - Campo Rosso	1165	33	1165	33
		Padriciano - Divaca	960	42	960	41
		Riddes - Avise	1010	21	1010	34
		Riddes - Valpelline	1010	23	1010	37
		Serra - Pallanzeno	900	29	900	39

For Terna:

<div style="width: 20px; height: 10px; border: 1px solid black; background-color: white;"></div>	X < 50 % of I <sub>max</sub>	<div style="width: 20px; height: 10px; border: 1px solid black; background-color: yellow;"></div>	50 ≤ X < 75 % of I <sub>max</sub>	<div style="width: 20px; height: 10px; border: 1px solid black; background-color: red;"></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	1873	3886	143	792
	Compensation ratio (calculated from NTC)	40%	50%	2%	8%
	Pentalateral impact on physical flows	-27%	-56%	-4%	-13%
Peak	Initial physical flows on adapted base case	2377	4961	152	809
	Compensation ratio (calculated from NTC)	38%	52%	1%	9%
	Pentalateral impact on physical flows	-26%	-56%	-4%	-14%

## 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										
No critical constraint detected										

## 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	Terna / SWG	380	Robbia	Gorlago	N-2	104%	380	Bulciago	Soazza	
				S.Fiorano		108%	380	Sils	Soazza	
						103%	380	Lavorgo	Musignano	
		Preventive actions: Set la Praz PST to tap 1. 2 nodes in Sils (agreed by SWG) and increase 5 taps on Lavorgo PST. => Respectively 96% , 95% and 96% remaining.								
	Terna / Eles / APG	380	ATD	Redipuglia-Divaca	N-K	104%	220	Lienz	Soverzene	
		Curative action: Decrease 2 taps on Lienz PST => 93% remaining.								

### 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 Pentilateral reduction).

PST	Off Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	17	228
Rondissone 1 (1/33)	30	724
Rondissone 2 (1/33)	32	754
Camporosso (-32/32)	-5	156
Lienz (-32/32)	-11	145
Padriciano (1/33)	27	162
Divaca (-32/32 each)	-13	633

PST	Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	17	448
Rondissone 1 (1/33)	30	870
Rondissone 2 (1/33)	32	897
Camporosso (-32/32)	4	146
Lienz (-32/32)	-13	154
Padriciano (1/33)	31	157
Divaca (-32/32 each)	-19	653

## Conclusion

CWE: No critical constraint detected in the interest area, however high overloads on Tennet NL, Amprion and TenneT DE requiring redispatch. Zandvliet PSTs on tap 6/6 due to TenneT NL request to manage very high N -> S flows.

CEE: Critical constraints detected, needing outage cancellations and preventive redispatch due to very high wind infeed in Germany.

CSE: Constraints detected require coordination.