

<p><b><u>CORESO Engineers</u></b></p> <p><b><u>North :</u></b> MÜHLING Philipp</p> <p><b><u>South :</u></b> BRIEGERT Robin</p>	<p><b>Day Ahead report for</b></p> <p><b>01 January 2018</b></p>
<p><b>Security Levels:</b></p> <p><b>CWE:</b> For Elia and RTE no constraints detected, but high wind infeed in Germany makes significant amounts of redispatch necessary to release constraint on Amprion/ TennetDE border. Furthermore TennetNL asked to reduce Belgian PST taps to help with internal constraint (taps adapted to 6/6/12/12 for first 15 hours of the day.</p> <p><b>CEE:</b> No critical constraints detected.</p> <p><b>CSE:</b> No critical constraints detected</p>	

#### Key overall conditions

#### Outages table

#### Exchange program forecasts

#### ELIA expected flows & PSTs tap position

#### CEE Renewable Power Generation & Forecast

#### CWE and CSE 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 DACF					
ELIA			Elia	Doel	Pmax (MW)	1000	1	1900
						450	2	
Peak load [MW]	7600	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	5	2500
				Boxberg		500	2	1900
						900	1	
				Schw. Pumpe		800	2	1600
				Lippendorf		920	2	1840
RTE			RTE	Gravelines	Pmax (MW)	900	4	3600
Peak load [MW]	58700	11:00		Chooz		1500	1	1500
Generation Margin	Sufficient			Cattenom		1300	3	3900
				Fessenheim		900	1	900
NATIONAL GRID (UK time)				Penly		1300	2	2600
Peak load [MW]	39 700	17:25		Paluel		1300	2	2600
Generation Margin	Sufficient			Nogent s/ Seine		1300	2	2600
				Bugey		900	4	3600
TERNA				St Alban		1300	2	2600
Peak load [MW]	29138	19:30		Cruas		900	3	2700
Generation Margin	Sufficient			Tricastin		900	2	1800

### 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:

**RTE:** Production at Gravelines 3, Paluel 4 and Chooz 2 reduced to 0MW, but further reduction is needed.

**ELIA:** Doel 4 will reduce output to 600MW during the period 02:00-12:00

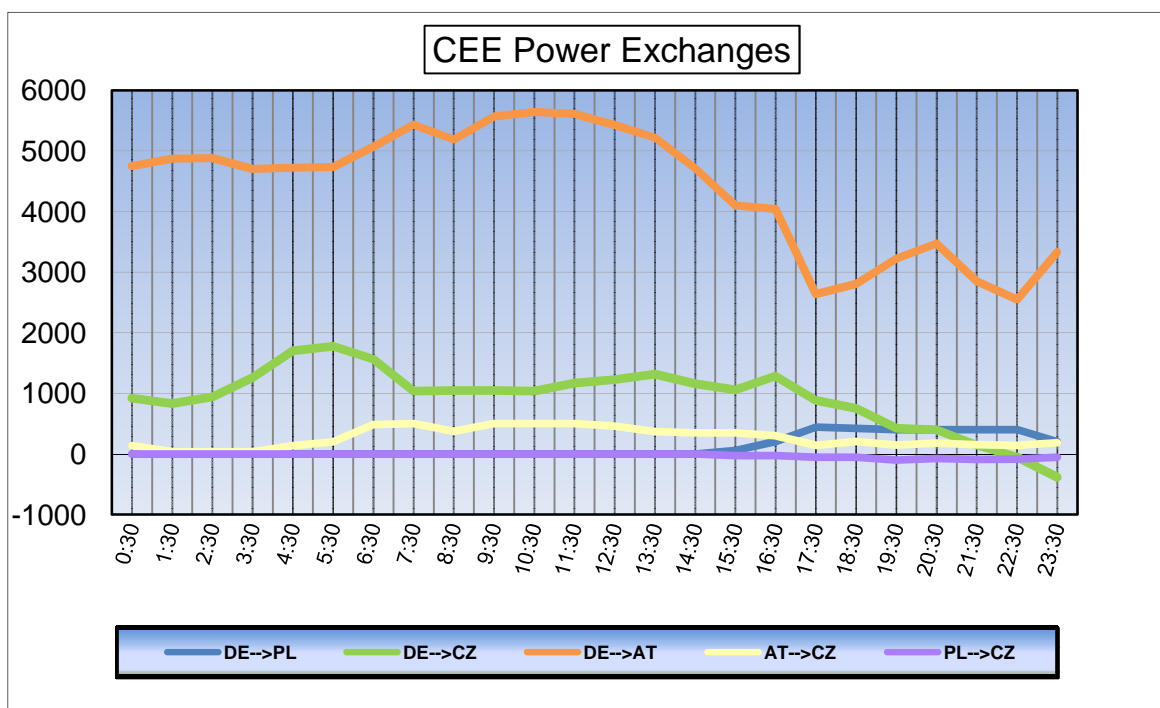
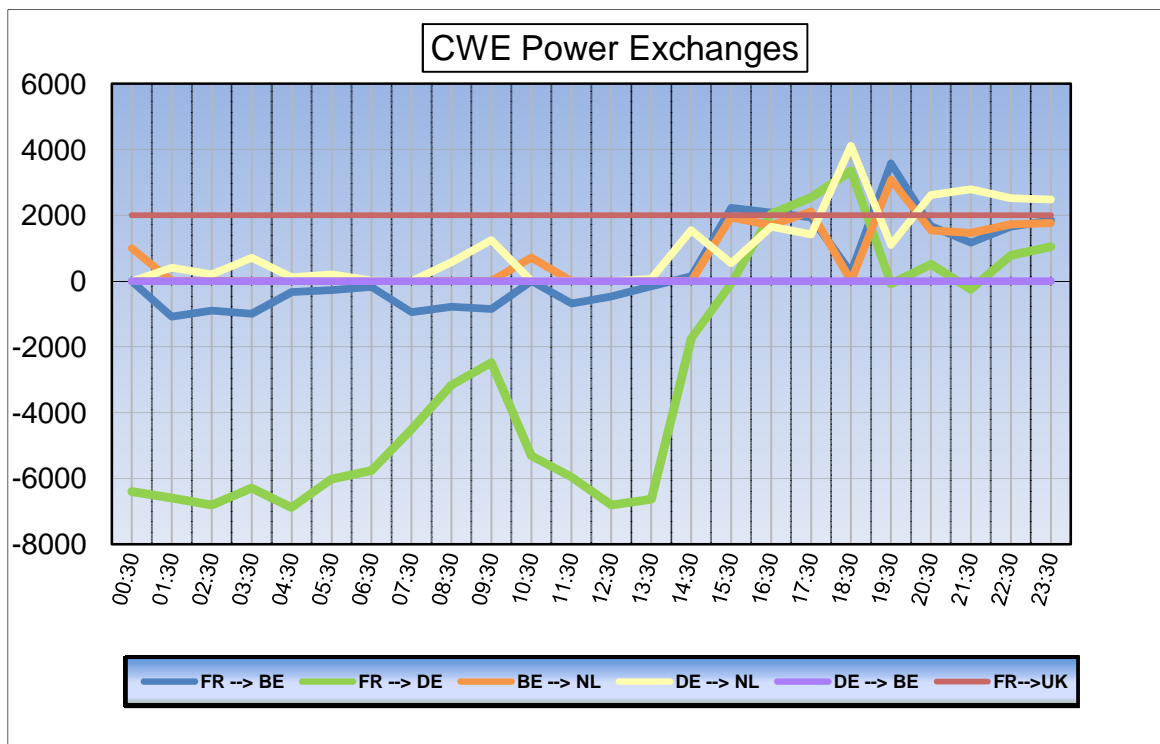
CWE / CEE

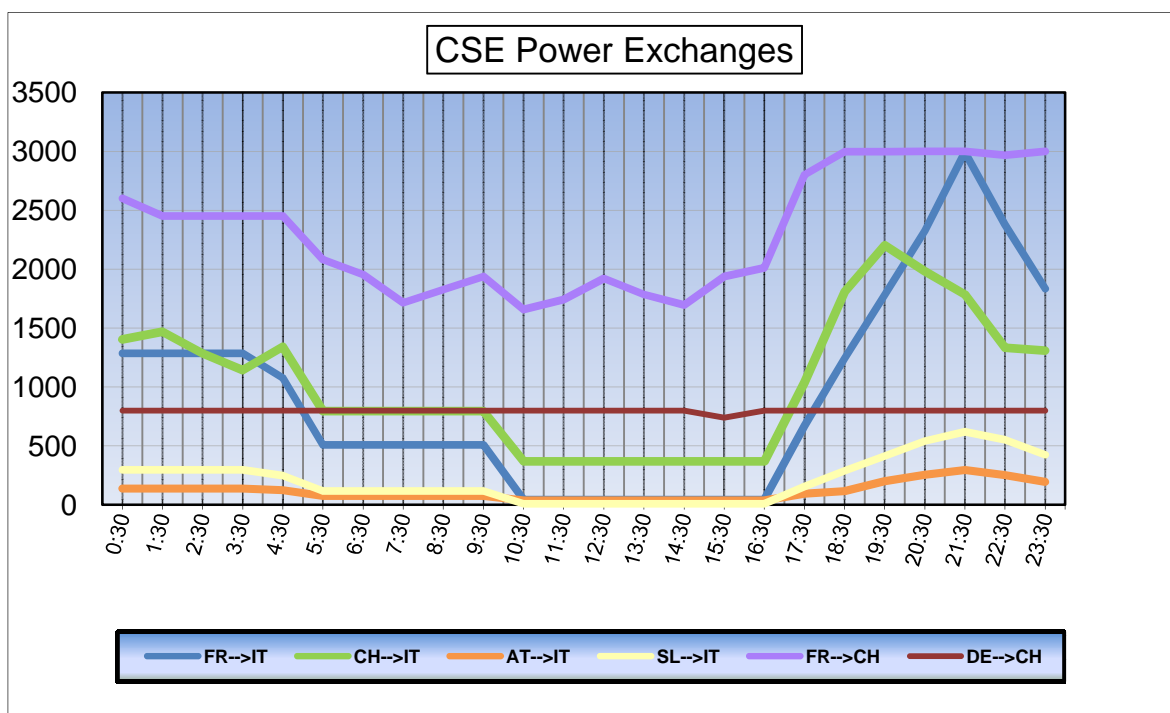
CSE

## Outages table

OUTAGES					
Owner	Type of element	Line name	start	end	Comments
50HzT	Fossil.Gen	BOXBERG _ UNIT R 400 kV	24/12/2017	04/01/2018	630 MW
50HzT	Fossil.Gen	BOXBERG _ Unit N 400 kV	24/12/2017	02/01/2018	290 MW (reduced)
50HzT	Fossil.Gen	JANSCHWALDE _ Unit D 400 kV	23/12/2017	01/01/2018	500 MW
50HzT	Fossil.Gen	Moorburg _ Unit B 400 kV	22/12/2017	02/01/2018	800MW
50HzT	Hydro.Gen	MARKERSBACH _ Unit D 400 kV	28/09/2017	27/04/2018	160 MW
50HzT	Line	WOLMIRSTEDT _ WUSTERMARK 494 400 kV	24/12/2017	07/01/2018	
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
APG	Line	TAUERN _ PST 220 kV	14/12/2017	15/01/2018	
CEPS	Generation	MELNIK _ UNIT 400 kV	04/11/2017	31/01/2018	
ELIA	Line	GEZELLE _ STEVIN 111 400 kV	19/09/2017	26/01/2018	
ELIA	Line	GEZELLE _ STEVIN 112 400 kV	19/09/2017	26/01/2018	
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	
RTE	Line	BARNABOS _ TERRIER 1 400 kV	18/12/2017	05/01/2018	
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	13/03/2017	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	06:30	07:30	10:30	11:30	12:30	13:30	16:30	17:30	19:30	23:30
BE	FR	ACHENE	LONNY	380.19	760	712	707	777	750	839	848	789	-158	-115	-237	-207
BE	FR	AUBANGE	MONT ST MARTIN	220.51	110	117	84	138	109	133	132	109	-155	-118	-154	-149
BE	FR	AUBANGE	MOULAIN	220.51	112	115	81	135	111	131	128	108	-143	-107	-140	-135
BE	FR	AVELGEM	AVELIN	380.80	848	987	853	838	685	813	834	690	-806	-997	-1019	-785
BE	FR	AVELGEM	MASTAING	380.79	201	301	281	277	174	233	228	154	-539	-613	-590	-487
BE	FR	MONCEAU	CHOOZ	220.48	-42	-8	1	15	-24	-14	-20	-38	-218	-228	-228	-210
BE	NL	VAN EYCK 1	MAASBRACHT	380.27	-576	-564	-654	-551	-576	-627	-682	-672	-91	0	-77	-49
BE	NL	VAN EYCK 2	MAASBRACHT	380.28	-143	-333	-552	-302	-182	-294	-378	-324	754	1048	777	788
BE	NL	ZANDVLIET	BORSSELE	380.29	-214	-245	-313	-228	-178	-255	-304	-309	182	268	270	220
BE	NL	ZANDVLIET	GEERTRUIDENBERG	380.30	74	56	-131	31	9	-92	-140	-119	664	809	787	829
BE	LU	BELVAL	SCHIFFLANGE	220.511	-131	-144	-180	-181	-162	-186	-185	-226	122	224	108	107

BE	FR	TOTAL		1989	2224	2007	2180	1805	2135	2150	1812	-2019	-2178	-2368	-1973
BE	NL	TOTAL		-859	-1086	-1650	-1050	-927	-1268	-1504	-1424	1509	2125	1757	1788
BE	LU	TOTAL		-131	-144	-180	-181	-162	-186	-185	-226	122	224	108	107
TOTAL BELGIAN IMPORT/EXPORT				999	994	177	949	716	681	461	162	-388	171	-503	-78

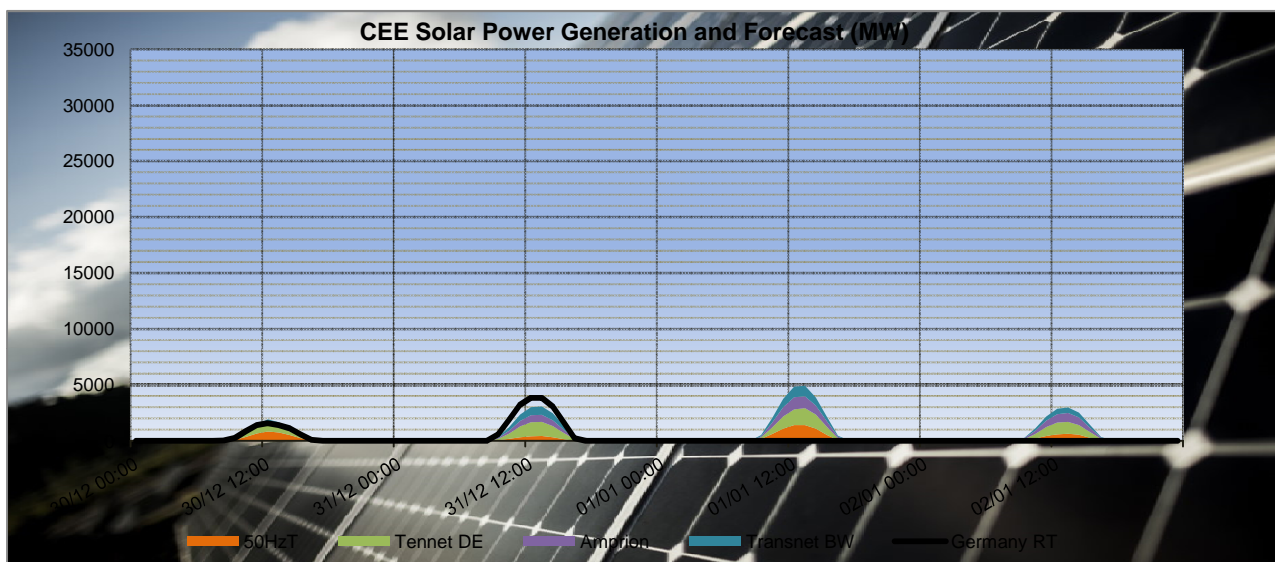
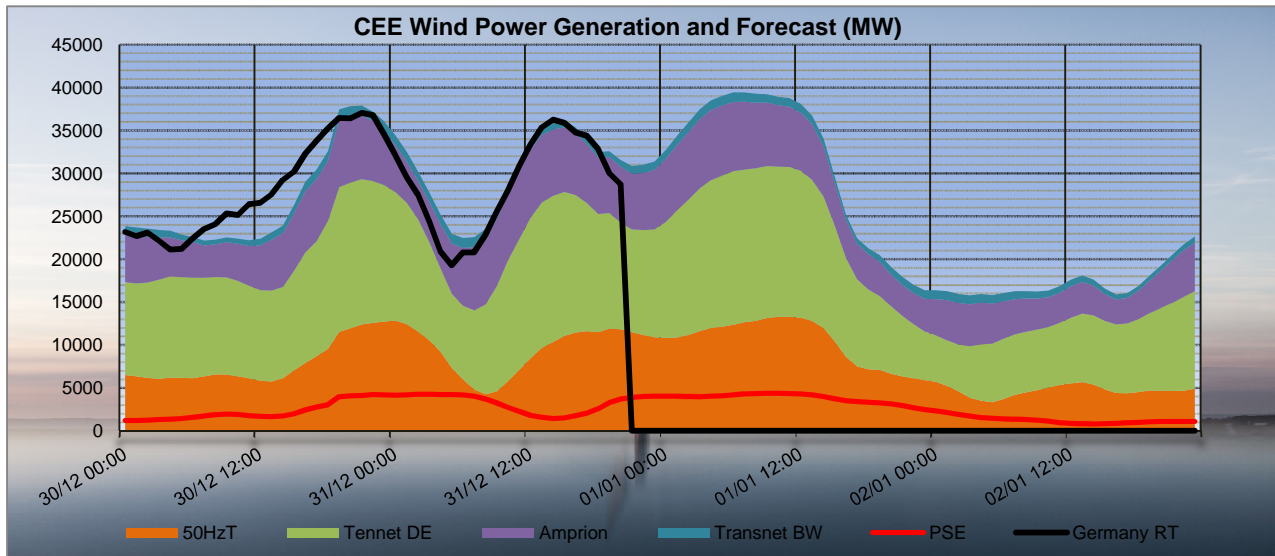
PST taps in DACF	Zandvliet 1	6	6	6	6	6	6	6	6	6	12	12	12	12
	Zandvliet 2	6	6	6	6	6	6	6	6	6	12	12	12	12
	Van Eyck 1	12	12	12	12	12	12	12	12	12	15	15	15	15
	Van Eyck 2	12	12	12	12	12	12	12	12	12	15	15	15	15
	Average	9	9	9	9	9	9	9	9	9	14	14	14	14

CREOS PST in DACF	Schiffange	15	15	15	17	17	17	17	17	17	17	17	17	17
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### Proposal for real time after D-1 studies

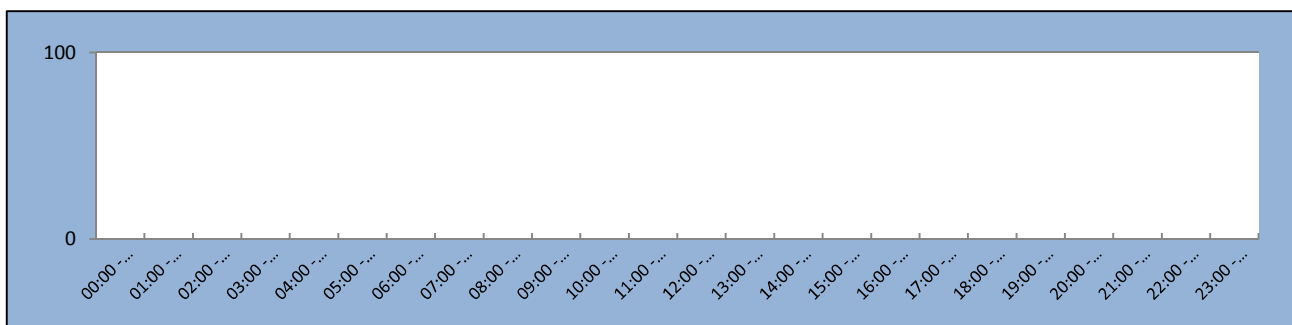
Timestamps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PSTs																								
Zandvliet PST 1	[1;35]	6	6	6	6	6	6	6	6	6	6	6	6	6	6	12	12	12	12	12	12	12	12	12
Zandvliet PST 2	[1;35]	6	6	6	6	6	6	6	6	6	6	6	6	6	6	12	12	12	12	12	12	12	12	12
Van Eyck PST 1	[1;35]	12	12	12	12	12	12	12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

## CEE Renewable Power Generation & Forecast

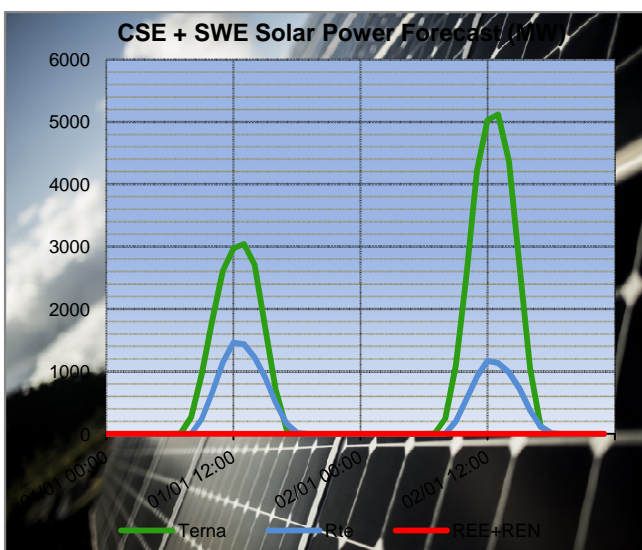
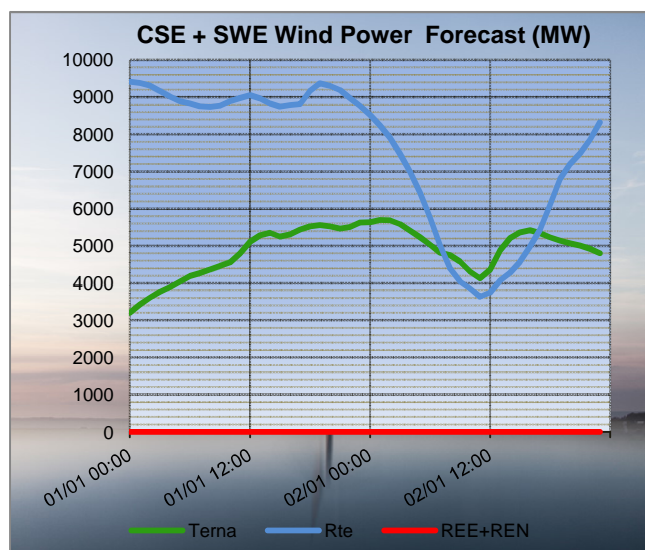
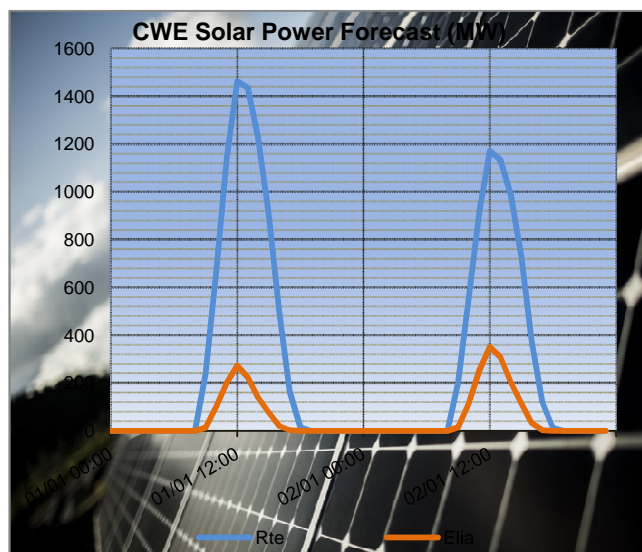
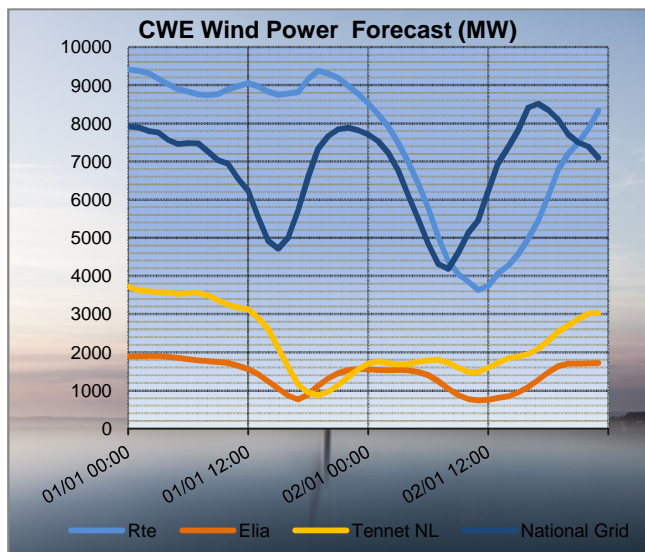


The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

## 50HzT counter trading



## CWE and CSE 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	-123	-364	-241	-37	-314	-277	-3	-256	-253	-76	-414	-338
FR	BE	MONT ST MARTIN	AUBANGE	6	-3	-9	-1	-6	-5	-98	-23	75	-88	-83	5
FR	BE	MOULAIN	AUBANGE	-1	-9	-8	-5	-10	-5	-98	-26	72	-85	-81	4
FR	BE	AVELIN	AVELGEM	126	-101	-227	98	-88	-186	358	262	-96	240	115	-125
FR	BE	MASTAING	AVELGEM	146	-1	-147	128	12	-116	262	204	-58	216	148	-68
FR	BE	CHOOZ	MONCEAU	76	12	-64	96	23	-73	136	83	-53	122	73	-49
FR	DE	MUHLBACH	EICHSTETTEN	-110	169	279	-217	96	313	190	325	135	35	268	233
FR	DE	VOGELGRUN	EICHSTETTEN	-42	25	67	-42	20	62	45	71	26	16	52	36
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	-166	6	172	-224	-127	97	268	204	-64	200	87	-113
FR	DE	VIGY	ENSDORF 2	-152	21	173	-207	-124	83	298	225	-73	229	105	-124

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	19	-341	-360	-155	-438	-283	-166	-489	-323
FR	BE	MONT ST MARTIN	AUBANGE	-8	-52	-44	-87	-56	31	-89	-73	16
FR	BE	MOULAIN	AUBANGE	-14	-56	-42	-89	-60	29	-90	-75	15
FR	BE	AVELIN	AVELGEM	331	259	-72	139	-56	-195	69	-277	-346
FR	BE	MASTAING	AVELGEM	280	245	-35	217	97	-120	193	-20	-213
FR	BE	CHOOZ	MONCEAU	149	113	-36	161	89	-72	125	47	-78
FR	DE	MUHLBACH	EICHSTETTEN	106	356	250	-160	113	273	-305	54	359
FR	DE	VOGELGRUN	EICHSTETTEN	52	107	55	10	61	51	-20	26	46
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	247	166	-81	-28	-88	-60	-249	-239	10
FR	DE	VIGY	ENSDORF 2	274	186	-88	-7	-76	-69	-235	-238	-3

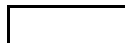
				03:30			07:30			10:30			12:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	226	213	-13	105	153	48	238	251	13	176	228	52
FR	CH	MAMBELIN	BASSECCOURT	-282	-203	79	-329	-242	87	-185	-117	68	-220	-137	83
FR	CH	SIERENTZ	BASSECCOURT	445	447	2	406	423	17	319	384	65	304	377	73
FR	CH	BOIS TOLLLOT	ROMANEL	20	-45	-65	-29	-62	-33	76	74	-2	70	86	16
FR	CH	SIERENTZ	LAUFENBURG	203	313	110	160	249	89	192	282	90	117	253	136
FR	CH	CORNIER	RIDDES	-89	-52	37	-99	-45	54	-52	7	59	-52	10	62
FR	CH	CORNIER	ST TRIPHON	-82	-57	25	-96	-46	50	-48	12	60	-39	19	58
FR	CH	PRESSY	VALLORCINES	-196	-169	27	-211	-144	67	-159	-85	74	-151	-77	74
FR	CH	BOIS TOLLLOT	VERBOIS	158	178	20	134	171	37	165	217	52	185	227	42
FR	CH	GENISSIAT	VERBOIS	132	128	-4	120	129	9	156	181	25	170	194	24
FR	CH	GENISSIAT	VERBOIS	132	128	-4	120	129	9	157	181	24	171	194	23
FR	IT	ALBERTVILLE	RONDISSONE	504	459	-45	565	450	-115	782	628	-154	756	634	-122
FR	IT	ALBERTVILLE	RONDISSONE	504	395	-109	565	385	-180	782	597	-185	756	588	-168
FR	IT	MENTON	CAMPOROSSO	256	264	8	151	320	169	153	531	378	159	542	383
FR	IT	VILLARODIN	VENAUS	11	144	133	113	169	56	468	475	7	481	535	54

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	167	269	102	7	168	161	20	144	124
FR	CH	MAMBELIN	BASSECCOURT	-148	-43	105	-235	-126	109	-282	-177	105
FR	CH	SIERENTZ	BASSECCOURT	265	342	77	295	336	41	386	400	14
FR	CH	BOIS TOLLLOT	ROMANEL	104	103	-1	57	48	-9	11	-10	-21
FR	CH	SIERENTZ	LAUFENBURG	133	236	103	45	175	130	30	227	197
FR	CH	CORNIER	RIDDES	-32	34	66	-53	8	61	-90	-41	49
FR	CH	CORNIER	ST TRIPHON	-15	35	50	-45	11	56	-70	-39	31
FR	CH	PRESSY	VALLORCINES	-123	-49	74	-145	-78	67	-203	-152	51
FR	CH	BOIS TOLLLOT	VERBOIS	186	228	42	182	215	33	192	195	3
FR	CH	GENISSIAT	VERBOIS	174	193	19	165	176	11	146	140	-6
FR	CH	GENISSIAT	VERBOIS	174	193	19	165	176	11	146	140	-6
FR	IT	ALBERTVILLE	RONDISSONE	821	693	-128	774	653	-121	544	508	-36
FR	IT	ALBERTVILLE	RONDISSONE	822	663	-159	775	607	-168	544	460	-84
FR	IT	MENTON	CAMPOROSSO	151	502	351	145	414	269	151	331	180
FR	IT	VILLARODIN	VENAUS	582	578	-4	654	694	40	237	375	138

## 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	38	2448	44
	Doel - Mercator (51)	2239	19	2239	7
	Doel - Mercator (52)	2239	19	2239	7
	Doel - Mercator (54)	2448	19	2448	7
	Doel - Zandvliet (25)	2349	10	2349	47
	Mercator - Horta (73)	2569	29	2569	24
	Courcelles - Gramme (31)	2327	47	2349	52
	Mercator - Rodenhuize/Horta (74)	2332	31	2349	25
RTE	Attaques - Warande 2	3780	37	3780	41
	Avelin - Gavrelle	2622	36	2622	25
	Avelin - Warande	3458	9	3458	25
	Lonny - Seuil	4149	11	4149	3
	Mandarins - Warande 1	3780	36	3780	39
	Muhlbach - Scheer	2598	13	2598	17
	Revigny - Vigy	2596	26	2596	5
	Warande - Weppes	3458	5	3458	29



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

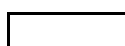


50 ≤ X < 75 % of I<sub>max</sub>



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	23	2520	38
		Hagenwerder - Mikulowa (567)	2520	41	2520	37
		Hagenwerder - Mikulowa (568)	2520	41	2520	37
		Remptendorf - Redwitz (413)	3394	47	3417	38
		Remptendorf - Redwitz (414)	3394	47	3417	38
		Röhrsdorf - Hradec (445)	2520	46	2520	27
		Röhrsdorf - Hradec (446)	2520	46	2520	27
		Vieselbach - Mecklar (449-1)	2520	20	2520	36
		Wolmirstedt - Helmstedt (491-1)	2400	18	2400	30
		Wolmirstedt - Helmstedt (492-2)	2400	18	2400	30
	220 kV	Vierraden - Krajnik (507)	1299	0	1334	0
		Vierraden - Krajnik (508)	1299	0	1334	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	1	1
	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	10:00-11:00	380	Graustein	Bärwalde	axis	100%	380	Graustein	Bärwalde	remaining	10:30
		<b>Preventive action:</b> 2 nodes in Bärwalde -> 86% remaining									
50HzT	11:00-12:00	380	Lauchstadt	Vieselbach	axis	102%	380	Lauchstadt	Vieselbach	remaining	11:30
		<b>Preventive action:</b> 2 nodes in Vieselbach -> 96% 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	12:00-14:00	380	Lelystad	Ens	axis	103%	380	Lelystad	Ens	remaining	12:30
		<b>Preventive action:</b> Two node topolgy in Lelystad => 99% remaining									
TenneT DE / Amprion	00:00-14:00	380	Dörpen West	Hanekenfahr	axis	149%	380	Niederlangen	Meppen	remaining	11:30
		N-State overload				103%					
		<b>Preventive actions:</b> Redispatching and Reduction of wind infeed (to be determined close to real time)									

### 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	
No constraints 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): **04:30**
- Peak period (07:00 – 23:00): **21:30**

Adaptations made on merged DACFs:

### Off-peak:

- SI → IT physical flow adapted to **800 MW**
- Mendrisio-Cagno flow adapted to this schedule : **196 MW**
- PST of Lienz adapted to **150 MW**
- PST of Camporosso adapted to **200 MW**

### Peak:

- SI → IT physical flow adapted to **800 MW**
- Mendrisio-Cagno flow adapted to this schedule : **106 MW**
- PST of Lienz adapted to: **140 MW**
- PST of Camporosso adapted to **200 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	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	1	2370	34
		Albertville - Rondissone 2	2370	8	2370	31
		Bulciago - Soazza	2300	22	2300	31
		Cagno - Mendrisio	855	32	855	17
		Musignano - Lavorgo	2270	30	2270	36
		Redipuglia - Divaca	2450	44	2450	37
		Robbia - San Fiorano	2530	14	2530	28
		Robbia - Gorlago	2530	26	2530	39
		Venaus - Villarodin	2715	1	2715	38
	220 kV	Airolo - Ponte	900	20	900	15
		Lienz - Soverzene	704	53	704	50
		Menton - Campo Rosso	1165	42	1165	42
		Padriciano - Divaca	960	15	960	41
		Riddes - Avise	1010	6	1010	18
		Riddes - Valpelline	1010	7	1010	19
		Serra - Pallanzeno	900	11	900	30

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	71	1776	151	784
	Compensation ratio (calculated from NTC)	37%	51%	4%	9%
	Pentalateral impact on physical flows	-26%	-57%	-3%	-14%
Peak	Initial physical flows on adapted base case	1993	2753	141	797
	Compensation ratio (calculated from NTC)	36%	51%	5%	8%
	Pentalateral impact on physical flows	-25%	-57%	-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	RTE	380	Albertville	Busbar	1	107%	220	Pressy	Passy	3
						118%	220	Albertville	Longfan	3
		Curative actions: set la Praz PST to neutral position => 95% remaining on Pressy - Passy and 93 % remaining on Albertville - Longfan								
	APG / Eles / Terna	380	ATD Redipuglia - Planais			99%	380	Lienz	PST	

## 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	la Coche	1&2	106%	380	Albertville	Longfan	3
<b>Curative actions:</b> set la Praz PST to neutral position => 80% 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)	1	-101
Rondissone 1 (1/33)	9	-128
Rondissone 2 (1/33)	15	-20
Camporosso (-32/32)	-27	202
Lienz (-32/32)	15	153
Padriciano (1/33)	1	32
Divaca (-32/32 each)	32	755

PST	Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	1	499
Rondissone 1 (1/33)	10	516
Rondissone 2 (1/33)	12	550
Camporosso (-32/32)	-8	202
Lienz (-32/32)	0	143
Padriciano (1/33)	13	157
Divaca (-32/32 each)	7	641

## Conclusion

CWE: For Elia and RTE no constraints detected, but high wind infeed in Germany makes significant amounts of redispatch necessary to release constraint on Amprion/ TennetDE border. Furthermore TennetNL asked to reduce Belgian PST taps to help with internal constraint (taps adapted to 6/6/12/12 for first 15 hours of the day).

CEE: No critical constraints detected.

CSE: No critical constraints detected