

<p><b><u>CORESO Engineers</u></b></p> <p><b><u>North :</u></b> NYAZIKA Paget</p> <p><b><u>South :</u></b> BONSIR Sébastien</p>	<p><b>Day Ahead report for</b></p> <p><b>07 January 2018</b></p>
<p><b>Security Levels:</b></p> <p><b>CWE: No critical constraint detected.</b></p> <p><b>CEE: No constraint detected.</b></p> <p><b>CSE: No critical constraints detected, however constraints identified in France that require preventive measures to be resolved.</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 DACF					
ELIA			Elia	Doel	Pmax (MW)	1000	1	1900
						450	2	
Peak load [MW]	8500	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	1900
						900	1	
				Schw. Pumpe		800	2	1600
				Lippendorf		920	2	1840
RTE			RTE	Gravelines	Pmax (MW)	900	6	5400
Peak load [MW]	56600	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]	46700	17:00		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]	32.459	19:30						
			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 Agreed the following topological changes to reduce loading on Chooz-Monceau  
- 2 nodes in Chooz and/or open standby on one 400/220KV Txf in Mazure.

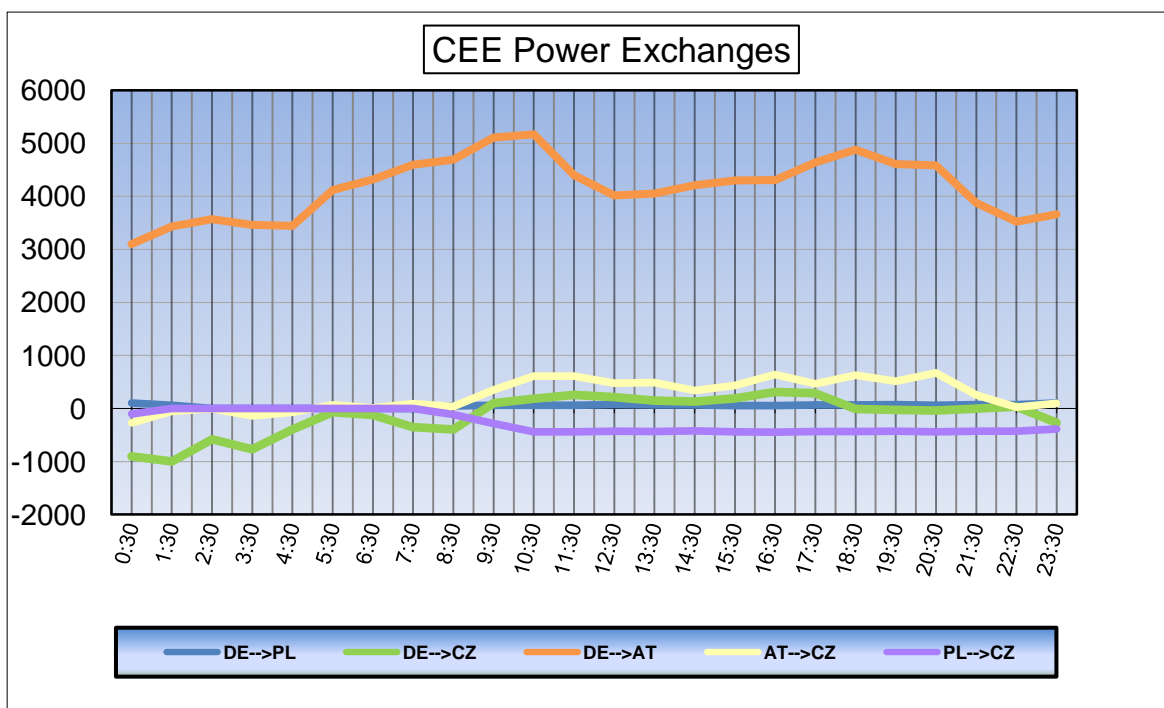
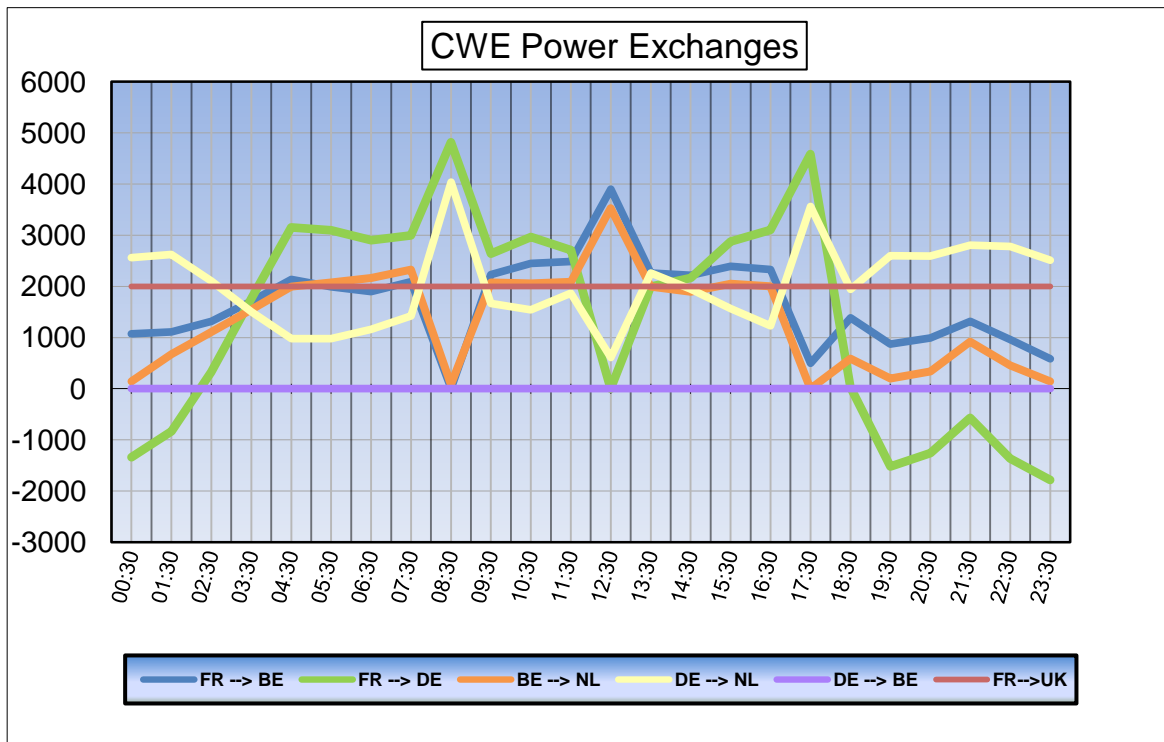
CSE

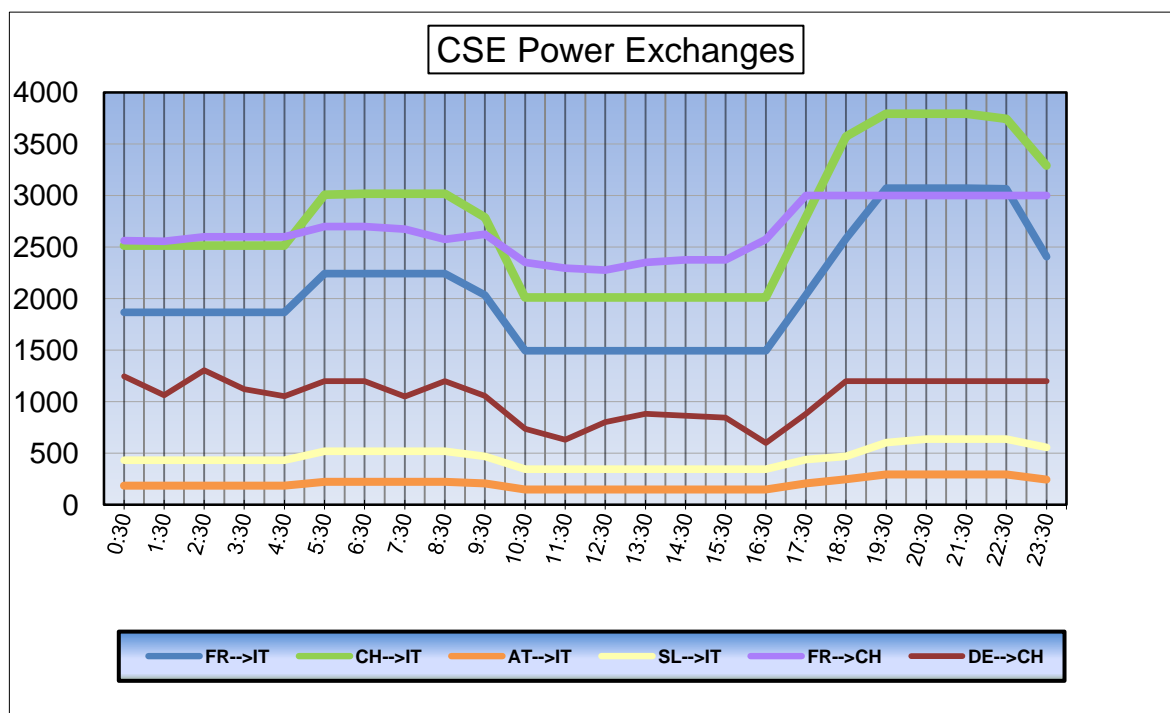
Riddes-Valpelline 220kV line back from forced outage on 06/01

## Outages table

OUTAGES					
Owner	Type of element	Line name	start	end	Comments
50HzT	Fossil.Gen	LIPPENDORF _ Unit S 400 kV	04/01/2018	07/01/2018	160 MW
50HzT	Hydro.Gen	MARKERSBACH _ Unit D 400 kV	28/09/2017	27/04/2018	
50HzT	Line	EULA _ Wolkramhausen 357 220 kV	06/10/2017	16/03/2018	
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 / 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	Forced outage
ELES	Generation	SOSTANJ _ UNIT 6 (550MW) 400 kV	19/12/2017	08/01/2018	
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	
PSE	Fossil.Gen	TUROW _ Unit 2 225 kV	01/03/2017	12/01/2018	
PSE	Line	BYCZYNA _ TUCZNAWA 400 kV	07/01/2018	07/01/2018	
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	TWISTETAL _ BORKEN 3 400 kV	16/05/2017	11/10/2018	Forced outage
TERNA	Line	PIAN CAMUNO _ S.FIORANO 358 400 kV	05/01/2018	31/01/2018	
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	00:30	03:30	04:30	07:30	08:30	10:30	12:30	14:30	17:30	19:30	21:30	23:30
BE	FR	ACHENE	LONNY	380.19	-4	-401	-521	-416	-374	-445	-376	-440	-429	59	-122	80
BE	FR	AUBANGE	MONT ST MARTIN	220.51	-56	-160	-227	-181	-175	-196	-175	-182	-144	-13	-58	-18
BE	FR	AUBANGE	MOULAIN	220.51	-60	-157	-219	-173	-166	-186	-166	-173	-140	-13	-60	-23
BE	FR	AVELGEM	AVELIN	380.80	-159	-731	-862	-830	-788	-897	-717	-810	-905	-114	-349	-38
BE	FR	AVELGEM	MASTAING	380.79	-219	-405	-460	-453	-459	-533	-479	-498	-570	-223	-289	-144
BE	FR	MONCEAU	CHOOZ	220.48	-174	-184	-192	-190	-196	-230	-231	-225	-254	-177	-179	-150
BE	NL	VAN EYCK 1	MAASBRACHT	380.27	-288	180	279	270	190	140	54	117	95	-287	-122	-261
BE	NL	VAN EYCK 2	MAASBRACHT	380.28	179	773	891	984	925	914	824	859	965	300	467	221
BE	NL	ZANDVLIET	BORSSELE	380.29	-198	78	127	163	143	124	96	145	126	-191	-58	-195
BE	NL	ZANDVLIET	GEERTRUIDENBERG	380.30	73	651	765	827	768	706	629	716	654	87	351	111
BE	LU	BELVAL	SCHIFFLANGE	220.511	-22	196	284	232	214	217	163	167	105	-94	22	-29

BE	FR	TOTAL		-672	-2038	-2481	-2243	-2158	-2487	-2144	-2328	-2442	-481	-1057	-293
BE	NL	TOTAL		-234	1682	2062	2244	2026	1884	1603	1837	1840	-91	638	-124
BE	LU	TOTAL		-22	196	284	232	214	217	163	167	105	-94	22	-29
TOTAL BELGIAN IMPORT/EXPORT				-928	-160	-135	233	82	-386	-378	-324	-497	-666	-397	-446

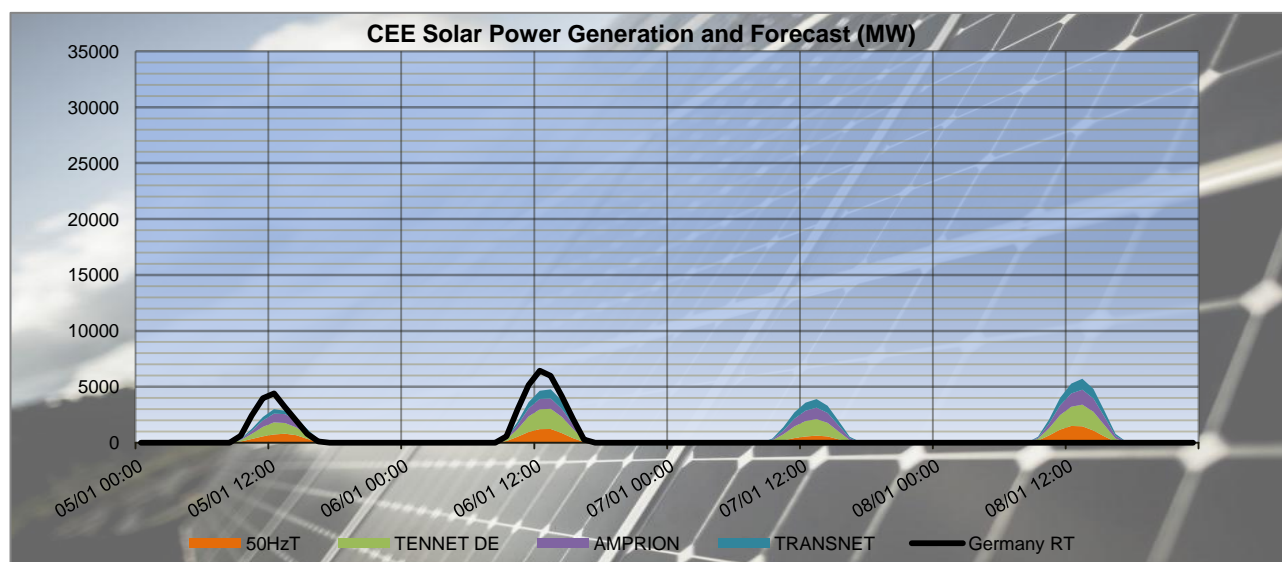
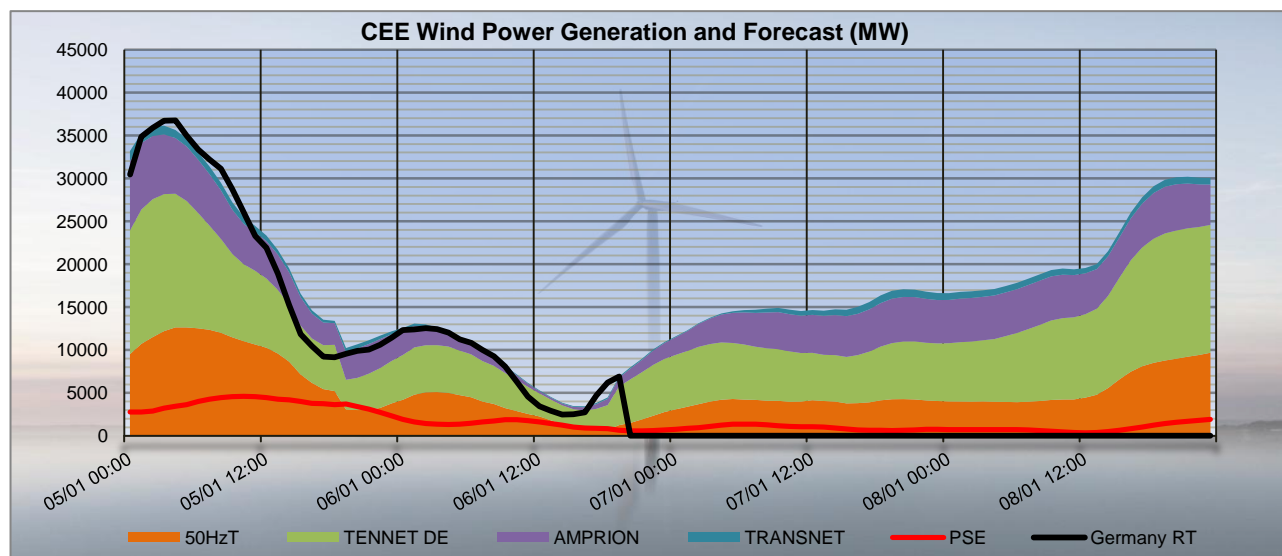
PST taps in DACF	Zandvliet 1	14	14	14	14	14	14	14	14	14	14	14	14	14
	Zandvliet 2	14	14	14	14	14	14	14	14	14	14	14	14	14
	Van Eyck 1	14	14	14	14	14	14	14	14	14	14	14	14	14
	Van Eyck 2	14	14	14	14	14	14	14	14	14	14	14	14	14
	Average	14	14	14	14	14	14	14	14	14	14	14	14	14

CREOS PST in DACF	Schiffange	17	17	19	17	17	17	17	17	17	17	17	17	17
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### Proposal for real time after D-1 studies

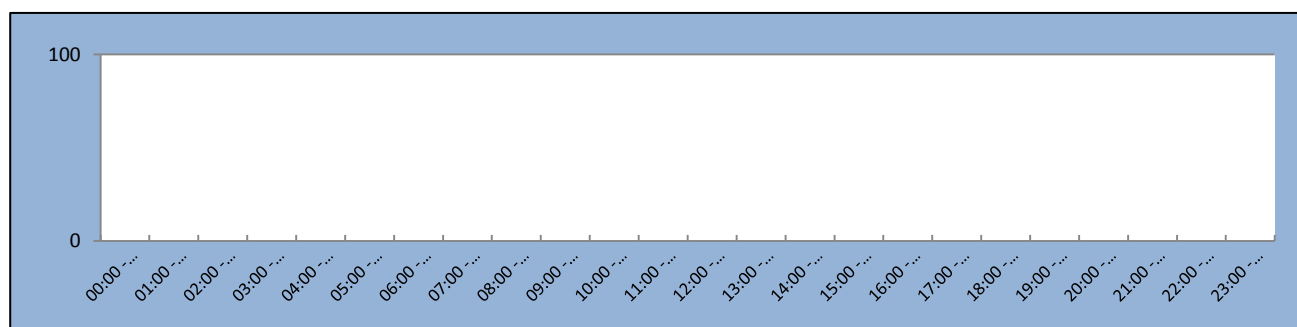
Timestamps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PSTs																								
Zandvliet PST 1	[1;35]	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Zandvliet PST 2	[1;35]	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Van Eyck PST 1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

## CEE Renewable Power Generation & Forecast

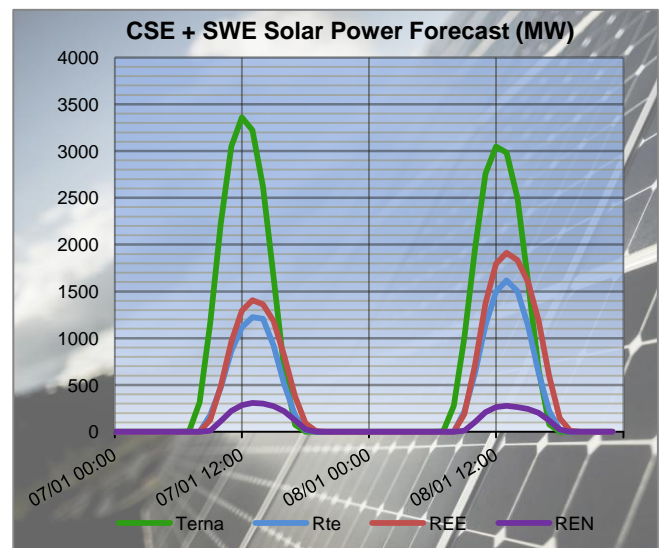
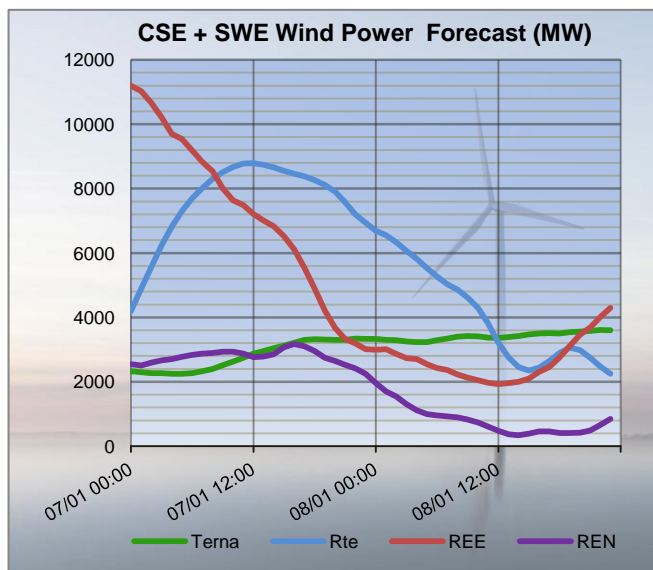
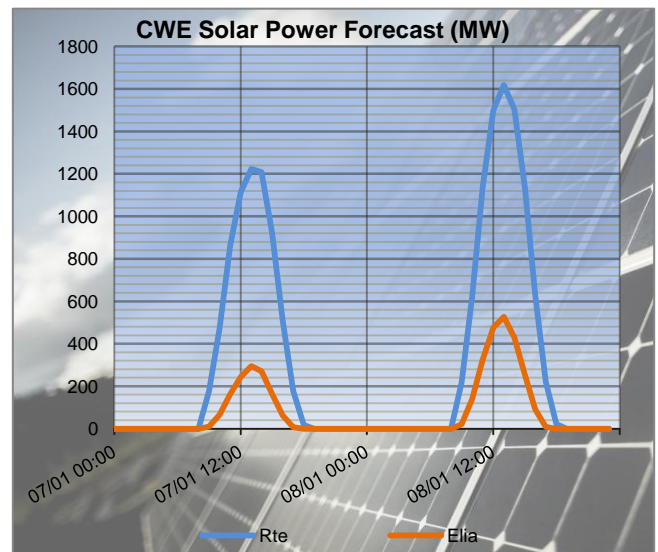
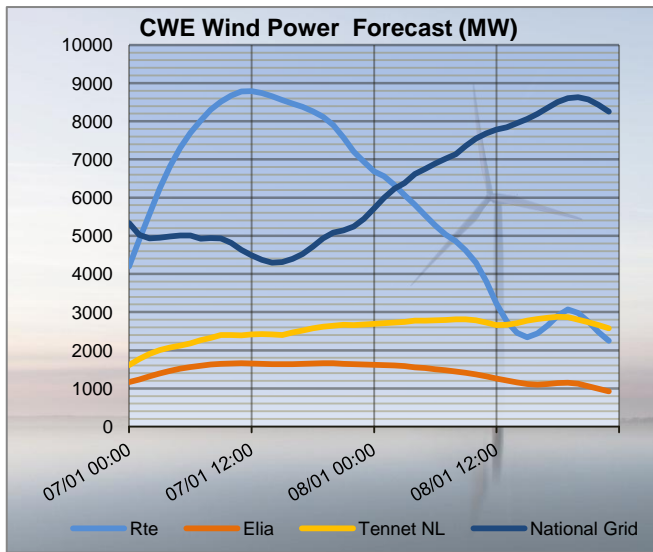


The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

## 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	445	401	-44	512	416	-96	639	445	-194	586	376	-210
FR	BE	MONT ST MARTIN	AUBANGE	42	160	118	79	181	102	75	196	121	116	175	59
FR	BE	MOULAIN	AUBANGE	45	157	112	76	173	97	71	186	115	109	166	57
FR	BE	AVELIN	AVELGEM	873	731	-142	1020	830	-190	1224	897	-327	974	717	-257
FR	BE	MASTAING	AVELGEM	511	405	-106	584	453	-131	746	533	-213	651	479	-172
FR	BE	CHOOZ	MONCEAU	165	184	19	184	190	6	245	230	-15	233	231	-2
FR	DE	MUHLBACH	EICHSTETTEN	345	483	138	728	858	130	521	729	208	217	522	305
FR	DE	VOGELGRUN	EICHSTETTEN	83	98	15	137	121	-16	132	110	-22	38	68	30
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	823	662	-161	1036	795	-241	1100	734	-366	738	572	-166
FR	DE	VIGY	ENSDORF 2	886	709	-177	1108	845	-263	1181	786	-395	806	617	-189

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	598	429	-169	215	-59	-274	208	-80	-288
FR	BE	MONT ST MARTIN	AUBANGE	102	144	42	82	13	-69	86	18	-68
FR	BE	MOULAIN	AUBANGE	99	140	41	78	13	-65	87	23	-64
FR	BE	AVELIN	AVELGEM	1120	905	-215	507	114	-393	442	38	-404
FR	BE	MASTAING	AVELGEM	714	570	-144	470	223	-247	404	144	-260
FR	BE	CHOOZ	MONCEAU	244	254	10	192	177	-15	165	150	-15
FR	DE	MUHLBACH	EICHSTETTEN	619	879	260	-102	434	536	-89	403	492
FR	DE	VOGELGRUN	EICHSTETTEN	124	130	6	-64	22	86	-71	33	104
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	1083	829	-254	214	158	-56	-75	37	112
FR	DE	VIGY	ENSDORF 2	1157	877	-280	250	180	-70	-49	55	104

				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	322	378	56	469	586	117	217	457	240	159	288	129
FR	CH	MAMBELIN	BASSEECOURT	32	91	59	91	178	87	48	169	121	-29	89	118
FR	CH	SIERENTZ	BASSEECOURT	240	288	48	240	335	95	167	287	120	174	276	102
FR	CH	BOIS TOLLOT	ROMANEL	177	132	-45	229	146	-83	172	112	-60	137	70	-67
FR	CH	SIERENTZ	LAUFENBURG	190	260	70	347	471	124	112	347	235	127	226	99
FR	CH	CORNIER	RIDDES	-1	57	58	30	89	59	17	74	57	-2	57	59
FR	CH	CORNIER	ST TRIPHON	2	52	50	28	52	24	32	44	12	15	31	16
FR	CH	PRESSY	VALLORCINES	-81	-3	78	-34	24	58	-41	6	47	-60	-7	53
FR	CH	BOIS TOLLOT	VERBOIS	137	183	46	143	176	33	161	178	17	154	191	37
FR	CH	GENISSIAT	VERBOIS	189	203	14	211	211	0	210	206	-4	188	194	6
FR	CH	GENISSIAT	VERBOIS	189	203	14	211	211	0	210	206	-4	188	194	6
FR	IT	ALBERTVILLE	RONDISSONE	881	766	-115	1002	931	-71	797	827	30	792	756	-36
FR	IT	ALBERTVILLE	RONDISSONE	882	705	-177	1003	889	-114	797	797	0	792	756	-36
FR	IT	MENTON	CAMPOROSSO	249	543	294	153	564	411	146	448	302	157	370	213
FR	IT	VILLARODIN	VENAUS	79	86	7	226	281	55	58	255	197	151	265	114

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	357	498	141	140	342	202	237	376	139
FR	CH	MAMBELIN	BASSEECOURT	82	171	89	-158	-17	141	-181	-47	134
FR	CH	SIERENTZ	BASSEECOURT	233	333	100	300	355	55	358	398	40
FR	CH	BOIS TOLLOT	ROMANEL	151	162	11	10	55	45	82	15	-67
FR	CH	SIERENTZ	LAUFENBURG	228	350	122	133	240	107	204	257	53
FR	CH	CORNIER	RIDDES	19	82	63	-51	34	85	-62	5	67
FR	CH	CORNIER	ST TRIPHON	26	56	30	-58	3	61	-75	-40	35
FR	CH	PRESSY	VALLORCINES	-50	12	62	-143	-47	96	-167	-97	70
FR	CH	BOIS TOLLOT	VERBOIS	219	221	2	168	192	24	122	166	44
FR	CH	GENISSIAT	VERBOIS	221	225	4	168	190	22	152	162	10
FR	CH	GENISSIAT	VERBOIS	221	226	5	168	190	22	152	162	10
FR	IT	ALBERTVILLE	RONDISSONE	948	918	-30	1014	917	-97	880	795	-85
FR	IT	ALBERTVILLE	RONDISSONE	948	917	-31	1014	902	-112	880	750	-130
FR	IT	MENTON	CAMPOROSSO	146	455	309	155	298	143	144	296	152
FR	IT	VILLARODIN	VENAUS	256	341	85	470	490	20	137	200	63

## 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	36	2448	42
	Doel - Mercator (51)	2239	10	2239	24
	Doel - Mercator (52)	2239	10	2239	24
	Doel - Mercator (54)	2448	10	2448	23
	Doel - Zandvliet (25)	2349	40	2349	14
	Mercator - Horta (73)	2569	24	2569	16
	Courcelles - Gramme (31)	2349	42	2349	50
	Mercator - Rodenhuize/Horta (74)	2349	26	2349	17
RTE	Attaques - Warande 2	3780	44	3780	50
	Avelin - Gavrelle	2622	18	2622	21
	Avelin - Warande	3458	25	3458	14
	Lonny - Seuil	4149	9	4149	18
	Mandarins - Warande 1	3780	42	3780	47
	Muhlbach - Scheer	2598	24	2598	27
	Revigny - Vigy	2596	9	2596	28
	Warande - Weppes	3458	30	3458	19



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

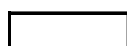


50 ≤ X < 75 % of I<sub>max</sub>



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	26	2520	29
		Hagenwerder - Mikulowa (567)	2520	31	2520	31
		Hagenwerder - Mikulowa (568)	2520	31	2520	31
		Remptendorf - Redwitz (413)	3440	28	3462	44
		Remptendorf - Redwitz (414)	3440	28	3462	44
		Röhrsdorf - Hradec (445)	2520	28	2520	40
		Röhrsdorf - Hradec (446)	2520	28	2520	40
		Vieselbach - Mecklar (449-1)	2520	25	2520	29
		Wolmirstedt - Helmstedt (491-1)	2400	26	2400	12
		Wolmirstedt - Helmstedt (492-2)	2400	26	2400	12
	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	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	
ELIA / CREOS	05hr	400	Van Eyck	Maasbracht		103%	220	Schiffange	PST		05:30
		<b>Preventive Action:</b> Increase 1 tap on Schiffange PST (19->20) = 91% remaining. With above preventive action no more constraints are detected.									

### 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	

### 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): **05:30**
- Peak period (07:00 – 23:00): **22:30**

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 : **200 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 : **196 MW**
- PST of Lienz adapted to **150 MW**
- PST of Camporosso adapted to **150 MW**

## Special topologies

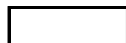
Nodes in South area				
			Off Peak	Peak
380 kV	Swissgrid	Sils	1	1
		Robbia	2	2
	Rte	Génissiat	1	1
		Albertville	1	1
		Grande Ile	2	2
	Terna	Turbigo	1	1
		Baggio	1	1
		Bovisio	1	1
		Ostiglia	1	1

## 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	61	2370	61
		Albertville - Rondissone 2	2370	61	2370	60
		Bulciago - Soazza	2300	24	2300	47
		Cagno - Mendrisio	855	39	855	35
		Musignano - Lavorgo	2270	36	2270	61
		Redipuglia - Divaca	2700	35	2700	34
		Robbia - San Fiorano	2530	23	2530	40
		Robbia - Gorlago	2530	32	2530	56
		Venaus - Villarodin	2715	15	2715	19
	220 kV	Airolo - Ponte	900	20	900	29
		Lienz - Soverzene	750	48	750	47
		Menton - Campo Rosso	1165	32	1165	32
		Padriciano - Divaca	960	36	960	41
		Riddes - Avise	1010	30	1010	48
		Riddes - Valpelline	1010	33	1010	52
		Serra - Pallanzeno	900	44	900	46

For Terna:



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



50 ≤ X < 75 % of I<sub>max</sub>



X ≥ 75 % of I<sub>max</sub>

### 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	2365	2666	143	806
	Compensation ratio (calculated from NTC)	37%	50%	4%	9%
	Pentalateral impact on physical flows	-25%	-58%	-4%	-14%
Peak	Initial physical flows on adapted base case	2418	4372	138	804
	Compensation ratio (calculated from NTC)	39%	49%	4%	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	400	Albertville	Grande Ile	N-2	97% (1')	400	Albertville	Grande Ile	3
		Preventive action: Increase 7 taps (17 to 24) on La Praz PST => 101% (10') remaining Curative actions: 2 nodes in Chaffard 400kV (isolate busbar 1B) => 106% (20') remaining Then stop 3 pumps (480MW) in Super Bissorte => 99% (20') remaining								
	RTE	400	Albertville	Busbar	1A	100% (10')	220	Albertville	Longefan	2
		Curative action: Stop 3 pumps (480MW) in Super Bissorte => 93% (20') remaining Note : Thermal monitoring (Night thresholds) can also help to solve this constraint								
No more constraints detected with preventive actions mentioned above										

## 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	400	Albertville	Grande Ile	N-2	103% (20')	400	Albertville	Grande Ile	3
		Curative actions: 2 nodes in Chaffard 400kV (isolate busbar 1B) => 96% (20') remaining								
	400	Albertville	Busbar	1A	102% (1')	220	Albertville	Longefan	2	
					105% (20')	220	Malgovert	Contamine		
					103% (20')	220	Passy	Pressy		
	Preventive action: Increase 10 taps (17 to 27) on La Praz PST => 99% (10'), 94% (20') and 95% (20') remaining Curative action: Stop 2 pumps (320MW) in Super Bissorte => 99% (20'), 84% (20') and 86% (20') remaining Note : Thermal monitoring (Night thresholds) can also help to solve these constraints									
	Terna / Eles / APG	400	ATD	Redipuglia-Divaca	N-K	106%	220	Lienz	Soverzene	
Curative action: Decrease 2 taps on Lienz PST (from -4 to -6) => 93% remaining										
No more constraints detected with preventive actions mentioned above										

### **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)	24	143
Rondissone 1 (1/33)	33	990
Rondissone 2 (1/33)	33	990
Camporosso (-32/32)	6	154
Lienz (-32/32)	8	148
Padriciano (1/33)	14	37
Divaca (-32/32 each)	11	770

PST	Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	27	161
Rondissone 1 (1/33)	33	989
Rondissone 2 (1/33)	33	990
Camporosso (-32/32)	1	172
Lienz (-32/32)	-4	163
Padriciano (1/33)	19	60
Divaca (-32/32 each)	2	738

## **Conclusion**

CWE: No critical constraint detected.

CEE: No constraint detected.

CSE: No critical constraints detected, however constraints identified in France that require preventive measures to be resolved.