

<p><b><u>CORES</u>O Engineers</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>06 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 with preventive measures agreed by TSOs.</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]	9500	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]	68400	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]	43000	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]	34.386	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 Mazure and open standby on one 400/220KV Txf in Monceau.

CSE

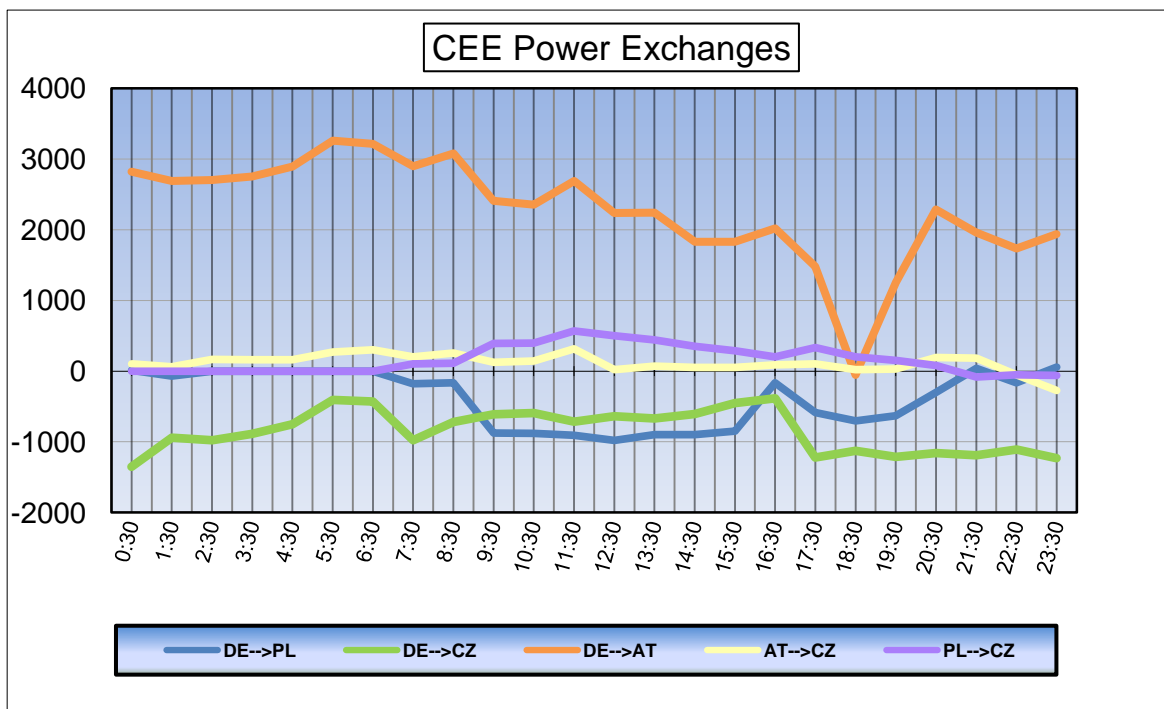
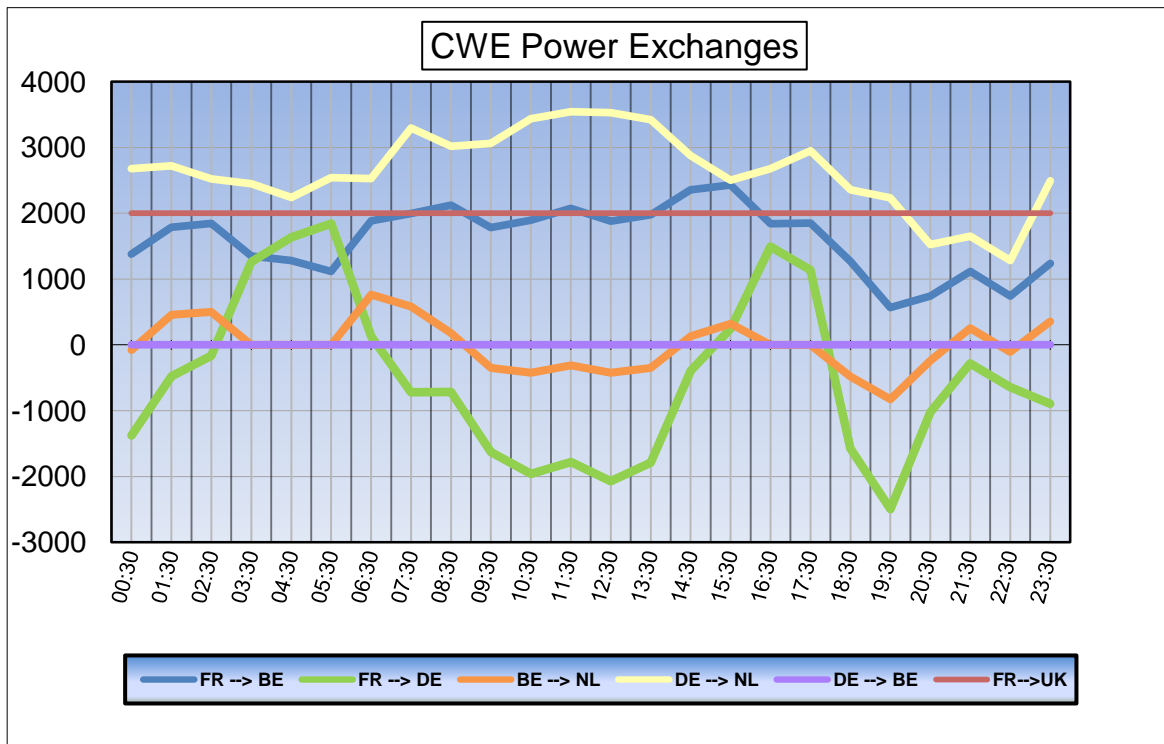
RTE: Return of Tricastin 1

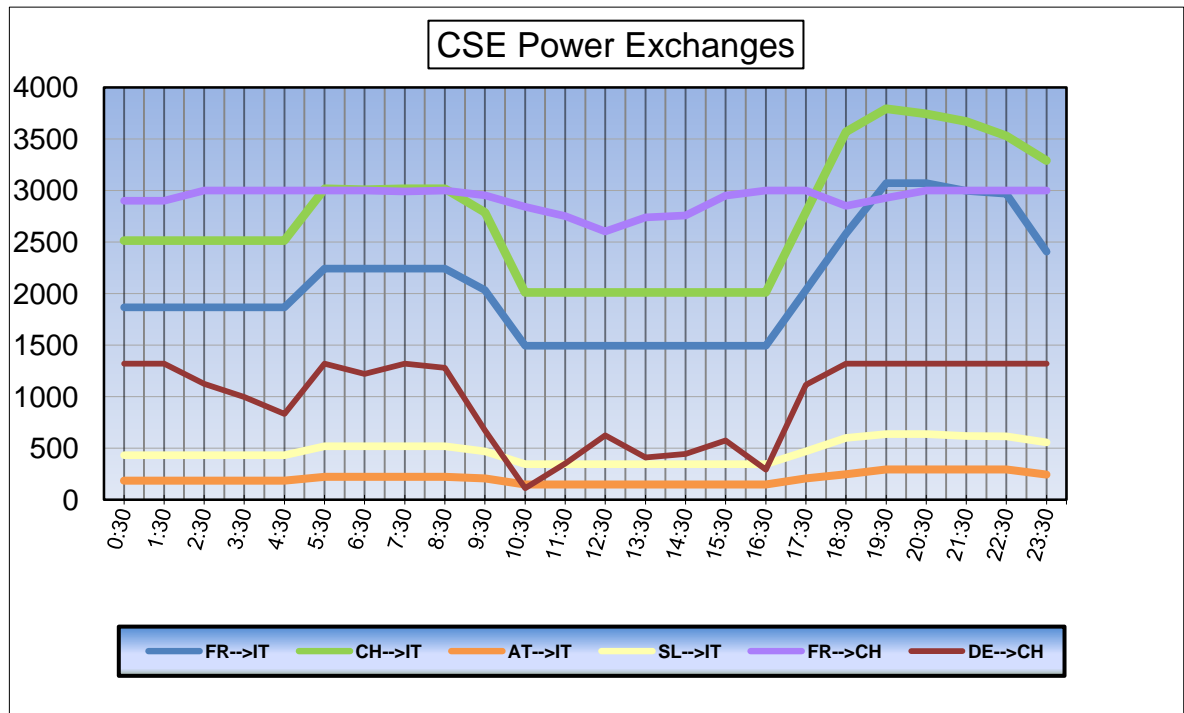
TERNA: Unplanned outage of 380kV line San Fiorano-Pian Camuno

## 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	
RTE	Nuc.Gen	CRUAS _ Unit 2 (900MW) 400 kV	02/12/2017	30/03/2018	182 MW
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	
RTE	Nuc.Gen	TRICASTIN _ Unit 1 (900MW) 400 kV	29/09/2017	06/01/2018	
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	
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	10:30	12:30	13:30	16:30	17:30	19:30	20:30	23:30
BE	FR	ACHENE	LONNY	380.19	2	-292	-290	-147	-137	-108	-171	-346	-325	133	77	-10
BE	FR	AUBANGE	MONT ST MARTIN	220.51	-78	-145	-162	-130	-148	-137	-161	-191	-151	-14	-48	-92
BE	FR	AUBANGE	MOULAIN	220.51	-85	-151	-166	-135	-151	-141	-168	-191	-155	-20	-57	-96
BE	FR	AVELGEM	AVELIN	380.80	-292	-786	-785	-619	-485	-408	-488	-832	-777	35	-27	-239
BE	FR	AVELGEM	MASTAING	380.79	-289	-435	-435	-432	-434	-401	-446	-544	-567	-161	-170	-242
BE	FR	MONCEAU	CHOOZ	220.48	-190	-189	-189	-216	-250	-247	-253	-264	-280	-183	-170	-177
BE	NL	VAN EYCK 1	MAASBRACHT	380.27	-379	-117	-99	-271	-427	-459	-420	-170	-206	-424	-309	-262
BE	NL	VAN EYCK 2	MAASBRACHT	380.28	101	343	374	322	123	71	121	488	518	29	141	257
BE	NL	ZANDVLIET	BORSSELE	380.29	-205	25	31	-2	-213	-230	-171	-33	-80	-374	-280	-154
BE	NL	ZANDVLIET	GEERTRUIDENBERG	380.30	-76	269	281	154	-178	-208	-159	118	111	-325	-188	78
BE	LU	BELVAL	SCHIFFLANGE	220.511	32	129	156	57	-14	-34	-8	129	58	-94	57	54

BE	FR	TOTAL		-932	-1998	-2027	-1679	-1605	-1442	-1687	-2368	-2255	-210	-395	-856
BE	NL	TOTAL		-559	520	587	203	-695	-826	-629	403	343	-1094	-636	-81
BE	LU	TOTAL		32	129	156	57	-14	-34	-8	129	58	-94	57	54
TOTAL BELGIAN IMPORT/EXPORT				-1459	-1349	-1284	-1419	-2314	-2302	-2324	-1836	-1854	-1398	-974	-883

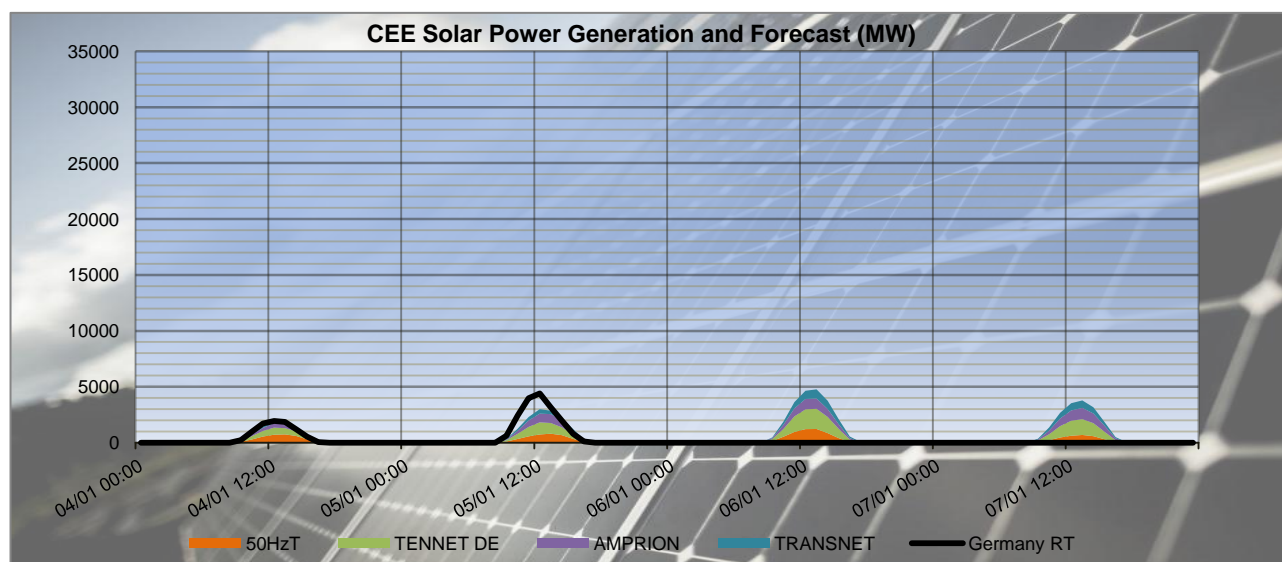
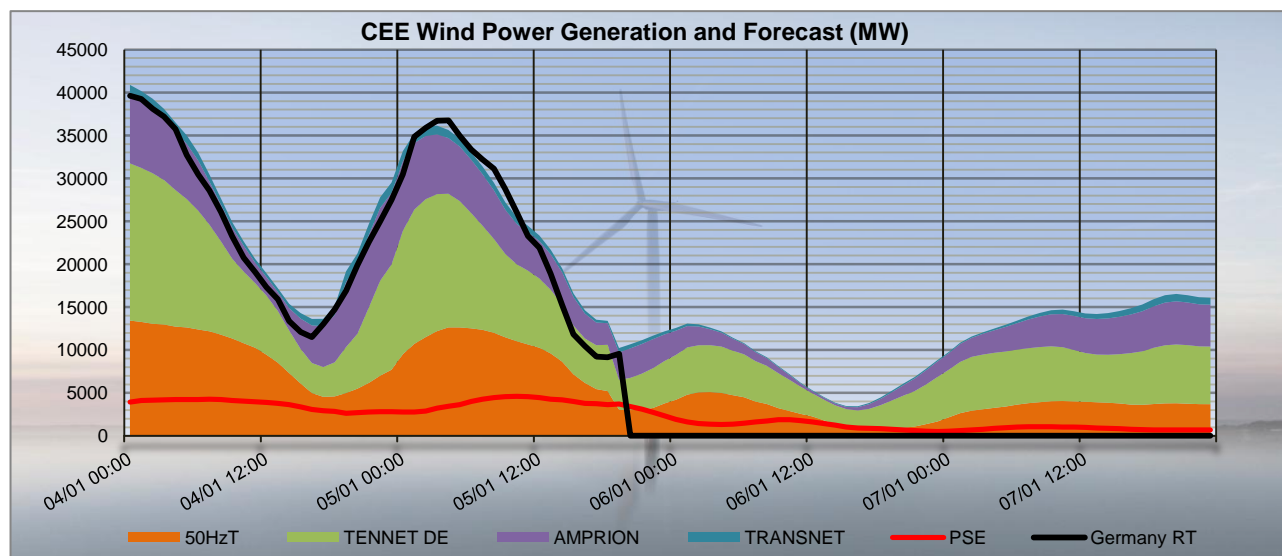
PST taps in DACF	Zandvliet 1	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	Zandvliet 2	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	Van Eyck 1	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	Van Eyck 2	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	Average	15	15	15	15	15	15	15	15	15	15	15	15	15	15

CREOS PST in DACF	Schiffflange	17	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

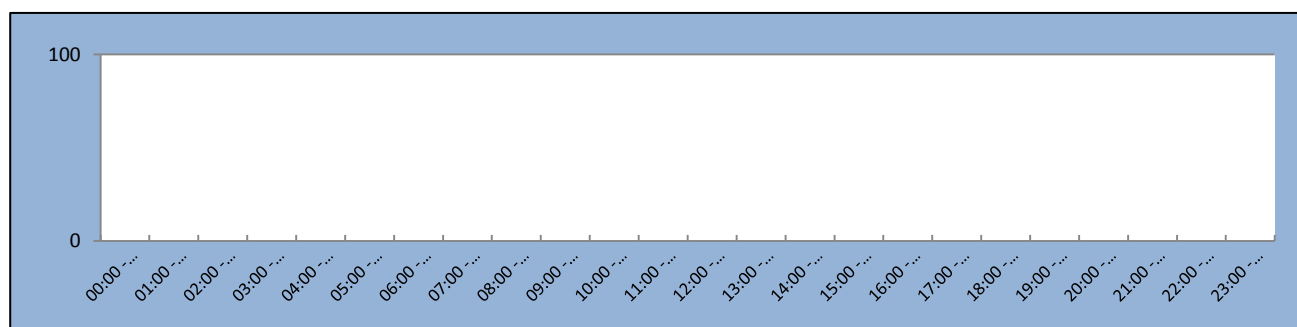
Timestamps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PSTs																								
Zandvliet PST 1	[1;35]	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Zandvliet PST 2	[1;35]	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Van Eyck PST 1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

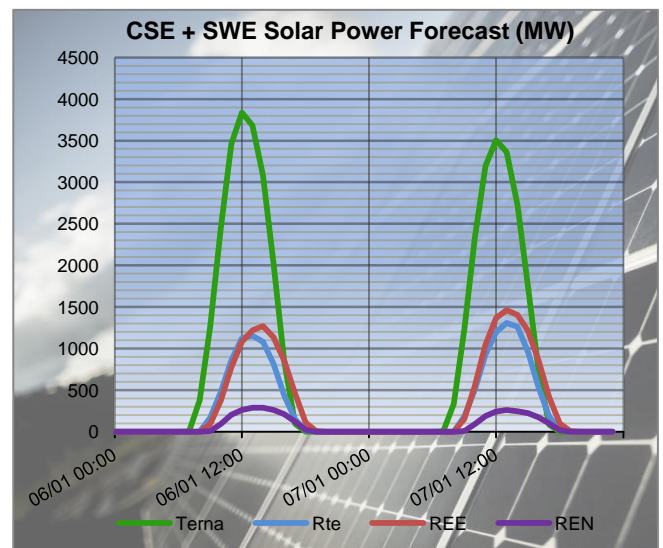
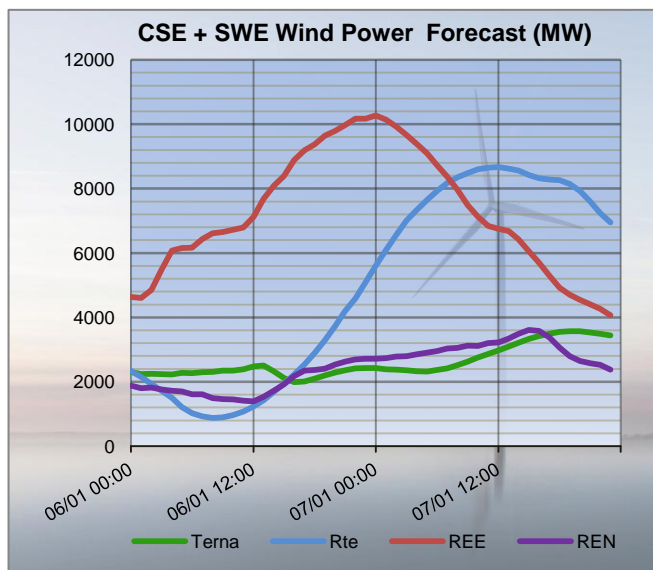
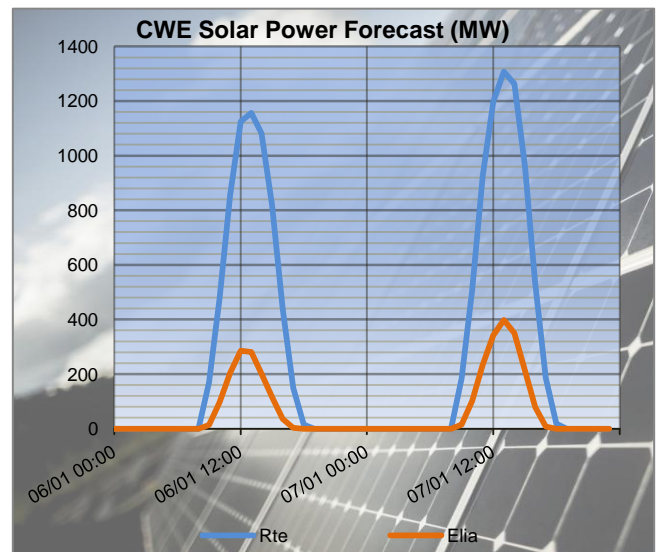
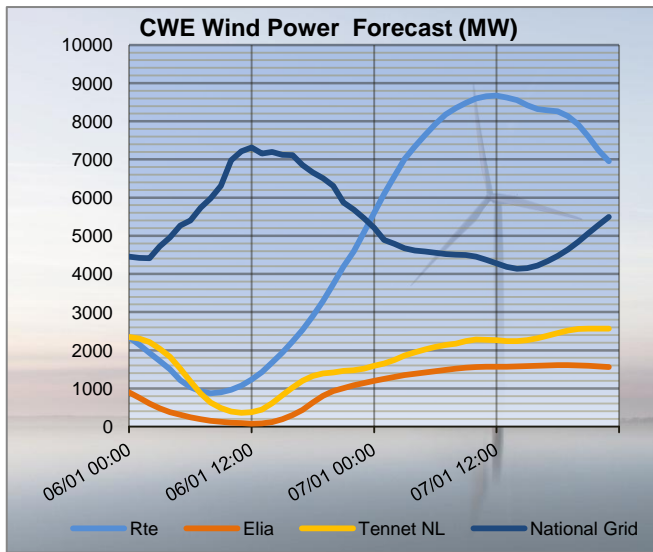


The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

## 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	549	292	-257	650	147	-503	622	137	-485	584	108	-476
FR	BE	MONT ST MARTIN	AUBANGE	98	145	47	195	130	-65	178	148	-30	206	137	-69
FR	BE	MOULAIN	AUBANGE	106	151	45	196	135	-61	180	151	-29	206	141	-65
FR	BE	AVELIN	AVELGEM	980	786	-194	949	619	-330	931	485	-446	786	408	-378
FR	BE	MASTAING	AVELGEM	569	435	-134	642	432	-210	717	434	-283	643	401	-242
FR	BE	CHOOZ	MONCEAU	221	189	-32	275	216	-59	319	250	-69	308	247	-61
FR	DE	MUHLBACH	EICHSTETTEN	277	511	234	-57	324	381	-405	4	409	-535	-73	462
FR	DE	VOGELGRUN	EICHSTETTEN	89	102	13	6	43	37	-17	21	38	-82	6	88
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	504	513	9	242	405	163	160	248	88	-17	177	194
FR	DE	VIGY	ENSDORF 2	556	560	4	286	447	161	203	288	85	20	214	194

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	642	325	-317	143	-133	-276	372	10	-362
FR	BE	MONT ST MARTIN	AUBANGE	162	151	-11	89	14	-75	138	92	-46
FR	BE	MOULAIN	AUBANGE	165	155	-10	91	20	-71	140	96	-44
FR	BE	AVELIN	AVELGEM	1063	777	-286	350	-35	-385	655	239	-416
FR	BE	MASTAING	AVELGEM	761	567	-194	411	161	-250	517	242	-275
FR	BE	CHOOZ	MONCEAU	306	280	-26	219	183	-36	216	177	-39
FR	DE	MUHLBACH	EICHSTETTEN	114	397	283	-303	97	400	-30	435	465
FR	DE	VOGELGRUN	EICHSTETTEN	62	88	26	-69	19	88	-27	82	109
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	525	611	86	-95	104	199	65	350	285
FR	DE	VIGY	ENSDORF 2	575	660	85	-73	131	204	97	386	289

				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	264	386	122	152	367	215	-175	101	276	-148	61	209
FR	CH	MAMBELIN	BASSEECOURT	-72	8	80	-197	-66	131	-331	-179	152	-330	-189	141
FR	CH	SIERENTZ	BASSEECOURT	277	287	10	318	329	11	231	256	25	223	238	15
FR	CH	BOIS TOLLOT	ROMANEL	173	116	-57	140	87	-53	22	6	-16	44	19	-25
FR	CH	SIERENTZ	LAUFENBURG	150	251	101	150	295	145	-158	42	200	-85	5	90
FR	CH	CORNIER	RIDDES	0	58	58	-10	50	60	-46	19	65	-38	27	65
FR	CH	CORNIER	ST TRIPHON	3	12	9	-14	9	23	-38	-4	34	-24	5	29
FR	CH	PRESSY	VALLORCINES	-75	-18	57	-81	-22	59	-116	-50	66	-100	-35	65
FR	CH	BOIS TOLLOT	VERBOIS	138	159	21	139	165	26	128	162	34	141	177	36
FR	CH	GENISSIAT	VERBOIS	189	187	-2	187	189	2	143	156	13	146	158	12
FR	CH	GENISSIAT	VERBOIS	189	187	-2	187	189	2	143	156	13	147	158	11
FR	IT	ALBERTVILLE	RONDISSONE	873	812	-61	881	806	-75	650	604	-46	706	627	-79
FR	IT	ALBERTVILLE	RONDISSONE	873	797	-76	882	806	-76	650	604	-46	707	627	-80
FR	IT	MENTON	CAMPOROSSO	249	392	143	160	348	188	147	210	63	151	186	35
FR	IT	VILLARODIN	VENAUS	68	165	97	38	68	30	-68	29	97	9	80	71

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	159	318	159	54	200	146	249	344	95
FR	CH	MAMBELIN	BASSEECOURT	-89	-3	86	-288	-173	115	-179	-41	138
FR	CH	SIERENTZ	BASSEECOURT	238	257	19	311	325	14	336	357	21
FR	CH	BOIS TOLLOT	ROMANEL	116	163	47	3	50	47	137	92	-45
FR	CH	SIERENTZ	LAUFENBURG	79	144	65	53	90	37	196	222	26
FR	CH	CORNIER	RIDDES	12	79	67	-41	38	79	-27	40	67
FR	CH	CORNIER	ST TRIPHON	18	58	40	-53	-2	51	-37	-5	32
FR	CH	PRESSY	VALLORCINES	-51	20	71	-125	-36	89	-121	-51	70
FR	CH	BOIS TOLLOT	VERBOIS	222	222	0	164	183	19	141	177	36
FR	CH	GENISSIAT	VERBOIS	203	211	8	159	175	16	168	177	9
FR	CH	GENISSIAT	VERBOIS	203	211	8	159	175	16	168	177	9
FR	IT	ALBERTVILLE	RONDISSONE	943	864	-79	1029	862	-167	951	835	-116
FR	IT	ALBERTVILLE	RONDISSONE	944	864	-80	1030	861	-169	952	791	-161
FR	IT	MENTON	CAMPOROSSO	145	341	196	160	374	214	152	247	95
FR	IT	VILLARODIN	VENAUS	251	271	20	454	392	-62	268	280	12

## 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	49	2448	45
	Doel - Mercator (51)	2239	28	2239	33
	Doel - Mercator (52)	2239	28	2239	33
	Doel - Mercator (54)	2448	28	2448	33
	Doel - Zandvliet (25)	2321	11	2349	12
	Mercator - Horta (73)	2569	17	2569	24
	Courcelles - Gramme (31)	2342	56	2349	51
	Mercator - Rodenhuize/Horta (74)	2349	20	2349	27
RTE	Attaques - Warande 2	3780	49	3780	53
	Avelin - Gavrelle	2622	7	2622	29
	Avelin - Warande	3458	17	3458	12
	Lonny - Seuil	4149	15	4149	21
	Mandarins - Warande 1	3780	45	3780	49
	Muhlbach - Scheer	2598	7	2598	17
	Revigny - Vigy	2596	28	2596	33
	Warande - Weppes	3458	22	3458	18



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

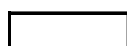


50 ≤ X < 75 % of I<sub>max</sub>



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	28	2520	25
		Hagenwerder - Mikulowa (567)	2520	11	2520	3
		Hagenwerder - Mikulowa (568)	2520	11	2520	3
		Remptendorf - Redwitz (413)	3417	32	3440	34
		Remptendorf - Redwitz (414)	3417	32	3440	34
		Röhrsdorf - Hradec (445)	2520	16	2520	10
		Röhrsdorf - Hradec (446)	2520	16	2520	10
		Vieselbach - Mecklar (449-1)	2520	31	2520	27
		Wolmirstedt - Helmstedt (491-1)	2400	16	2400	4
		Wolmirstedt - Helmstedt (492-2)	2400	16	2400	4
	220 kV	Vierraden - Krajnik (507)	1334	0	1325	0
		Vierraden - Krajnik (508)	1334	0	1325	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	
ELIA/RTE	10-18hr	400	Lonny	Busbar		102%	220	Chooz	Monceau		17:30
<b>Preventive Action:</b> 2 nodes in Chooz and open standby one 400/220kV Transformer at Mazure. With above preventive action nomore 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): **19:30**

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

## Special topologies

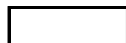
Nodes in South area				
			Off Peak	Peak
380 kV	Swissgrid	Sils	1	1
		Robbia	2	2
	Rte	Génissiat	1	1
		Albertville	1	1
		Grande Ile	2	2
	Terna	Turbigo	1	1
		Baggio	1	1
		Bovisio	<b>1</b>	<b>2</b>
		Ostiglia	1	1

## 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	57	2370	59
		Albertville - Rondissone 2	2370	57	2370	59
		Bulciago - Soazza	2300	26	2300	46
		Cagno - Mendrisio	855	36	855	36
		Musignano - Lavorgo	2270	41	2270	59
		Redipuglia - Divaca	2700	39	2700	40
		Robbia - San Fiorano	2530	21	2530	41
		Robbia - Gorlago	2530	36	2530	64
		Venaus - Villarodin	2715	12	2715	26
	220 kV	Airolo - Ponte	900	23	900	11
		Lienz - Soverzene	750	47	750	49
		Menton - Campo Rosso	1165	31	1165	35
		Padriciano - Divaca	960	18	960	34
		Riddes - Avise	1010	33	1010	35
		Riddes - Valpelline	1010	35	1010	38
		Serra - Pallanzeno	900	43	900	41

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	2197	2859	143	791
	Compensation ratio (calculated from NTC)	37%	50%	4%	9%
	Pentalateral impact on physical flows	-25%	-58%	-3%	-14%
Peak	Initial physical flows on adapted base case	2540	4226	149	875
	Compensation ratio (calculated from NTC)	39%	49%	4%	8%
	Pentalateral impact on physical flows	-26%	-55%	-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	400	Albertville	Busbar	1A	102% (1')	220	Albertville	Longefan	2
						101% (20')	220	Malgovert	Contamine	
		Preventive action: Increase 16 taps (17 to 33) on La Praz PST => 105% (20') and 85% (20') remaining Curative action: Stop 1 pump (160MW) in Super Bissorte => 97% (20') and 80% (20') remaining Note : Thermal monitoring (Night thresholds) can also help to solve these constraints								
	RTE	400	Albertville	Grande Ile	N-2	102% (20')	400	Albertville	Grande Ile	3
						Curative action: 2 nodes in Chaffard 400kV (isolate busbar 1B) => 95% (20') remaining Note : Stop 1 pump (160MW) in Super Bissorte can also help to solve this constraint				
No more constraints detected with preventive action 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	SWG / APG	400	Bonaduz	Sils	N-2	102%	400	Pradella	La Punt	
		Preventive action: 2 nodes in Sils 400kV (agreed by SWG) => 84% remaining								
	Terna / Eles / APG	400	ATD	Redipuglia-Divaca	N-K	108%	220	Lienz	Soverzene	
		Curative action: Decrease 2 taps on Lienz PST (from -17 to -19) => 96% remaining								
No more constraints detected with preventive action 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 Pentilateral reduction).

PST	Off Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	33	-91
Rondissone 1 (1/33)	33	975
Rondissone 2 (1/33)	33	975
Camporosso (-32/32)	2	163
Lienz (-32/32)	2	149
Padriciano (1/33)	12	62
Divaca (-32/32 each)	11	745

PST	Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	17	499
Rondissone 1 (1/33)	33	936
Rondissone 2 (1/33)	33	936
Camporosso (-32/32)	-3	156
Lienz (-32/32)	-17	156
Padriciano (1/33)	33	130
Divaca (-32/32 each)	-20	758

## Conclusion

CWE: No critical constraint detected.

CEE: No constraint detected.

CSE: No critical constraints detected with preventive measures agreed by TSOs.