CORESO Engineers ***North :*** BRIEGERT Robin ***South :*** KESRAOUI Mickael	**Day Ahead report for** **15 January 2018**

Security Levels:

CWE: No critical constraint detected.

CEE: Due to high wind infeed high amount of preventive redispatch implemented. Additionally several 2-node topologies are required.

CSE: No critical constraints detected.

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	08:00		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]	77900	13:00		Chooz		1500	2	3000
Generation Margin	Sufficient			Cattenom		1300	4	5200
				Fessenheim		900	**1**	900
NATIONAL GRID (UK time)				Penly		1300	2	2600
Peak load [MW]	48700	17:30		Paluel		1300	**3**	3900
Generation Margin	Sufficient			Nogent s/ Seine		1300	2	2600
				Bugey		900	4	3600
TERNA				St Alban		1300	2	2600
Peak load [MW]	46100	17:30		Cruas		900	**2**	1800
Generation Margin	Sufficient			Tricastin		900	4	3600

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

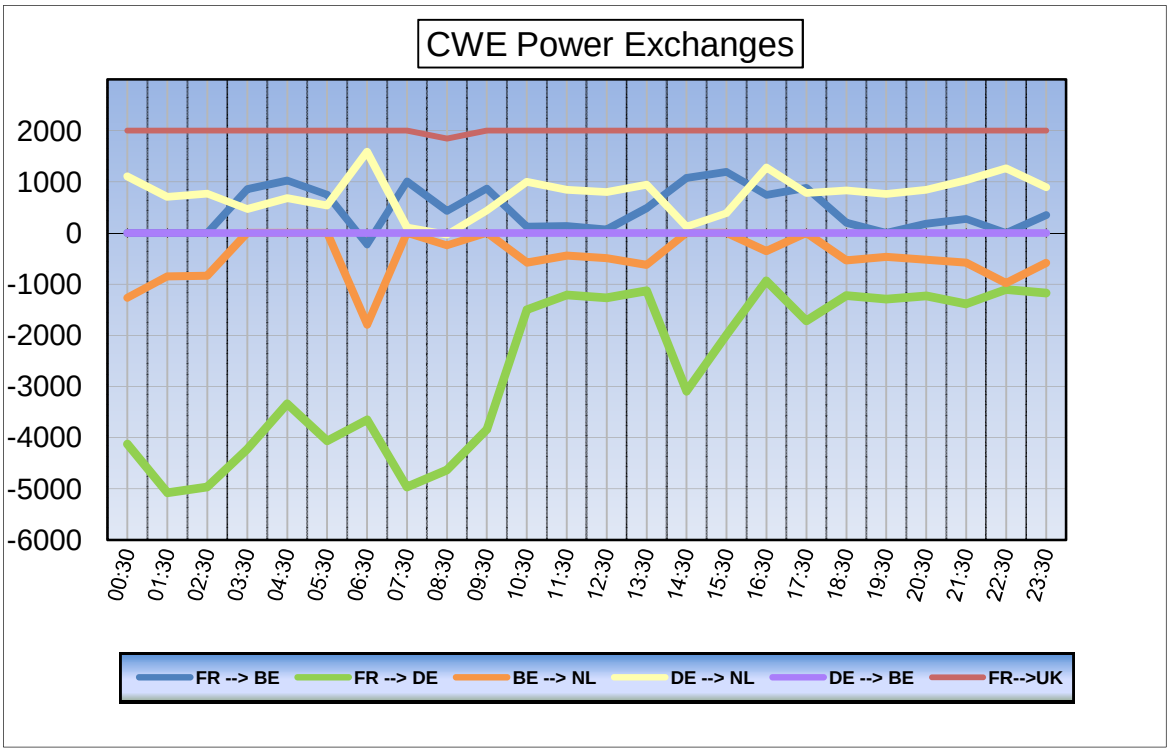
RTE: high load variation from 00:30 - 03:30 & 11:30 of around 3000MW.

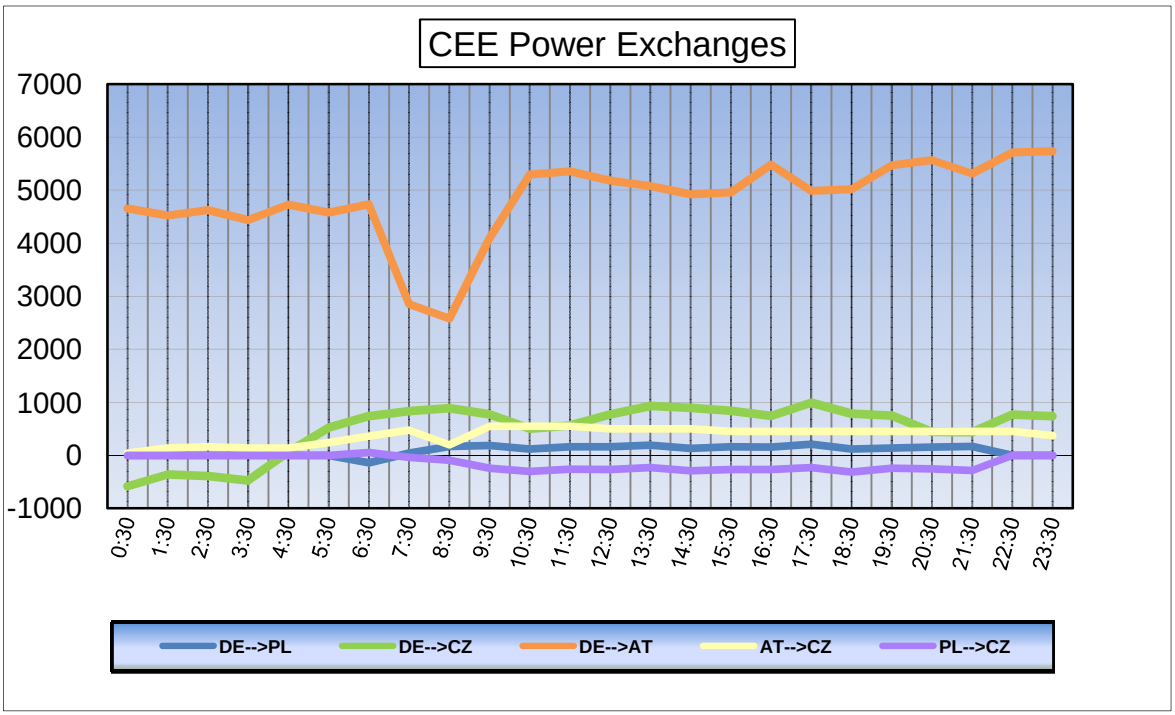
CSE

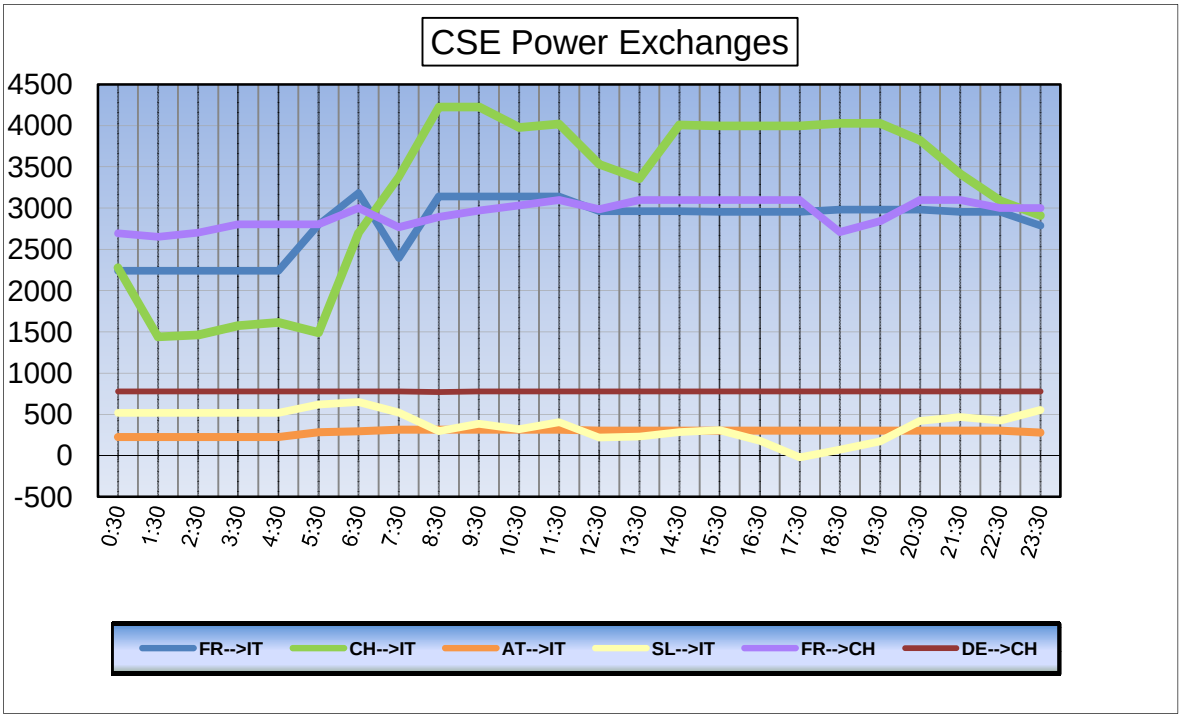
Outages table

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	BENTWISCH _ GUESTROW 544 400 kV	15/01/2018	16/01/2018	
50HzT	Line	EULA _ Wolkramhausen 357 220 kV	06/10/2017	16/03/2018	
50HzT	Line	HAMBURG Nord _ BRUNSBUTTEL 951 400 kV	14/01/2018	21/01/2018	
50HzT	Line	HAMBURG Nord _ HAMBURG Ost 961 400 kV	15/01/2018	19/01/2018	
50HzT	Line	LUBMIN _ WIKINGER 281 220 kV	26/09/2017	31/01/2018	
50HzT	Line	MARKERSBACH _ T connection ZWOENITZ 400 kV	15/01/2018	17/01/2018	
50HzT	Line	ROHRSDORF _ T connection ZWOENITZ 400 kV	15/01/2018	17/01/2018	
50HzT / PSE	Line	KRAJNIK _ VIERRADEN 507 225 kV	22/06/2016	21/01/2018	Long term outage
50HzT / PSE	Line	KRAJNIK _ VIERRADEN 508 225 kV	22/06/2017	21/01/2018	Long term outage
50HzT / TEN DE	Line	KRUMMEL _ KRUMMEL 994 400 kV	15/01/2018	15/01/2018	
AMP / TEN DE	Line	NEHDEN _ TWISTETAL W 400 kV	08/01/2018	23/02/2018	
AMPRION	Line	KOBLENZ _ LIMBURG (Nassau) 400 kV	15/01/2018	15/01/2018	
AMPRION	Line	MEMMINGEN _ VOHRINGEN 220 kV	15/01/2018	15/01/2018	
AMPRION	Line	NEHDEN _ ARPE Sud 400 kV	15/01/2018	02/02/2018	
APG	Line	LIENZ _ TAUERN 451 400 kV	15/01/2018	15/01/2018	
APG	Line	LIENZ _ TAUERN 452 400 kV	15/01/2018	15/01/2018	
APG	Line	ST PETER _ Salzburg 455 220 kV	15/01/2018	19/01/2018	ALTERNATING WITH 456
APG	Line	ST PETER _ Salzburg 456 220 kV	15/01/2018	19/01/2018	ALTERNATING WITH 455
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	
CEPS / SEPS	Line	NOSOVICE _ VARIN 404 400 kV	15/01/2018	02/03/2018	
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	Line	POLANIEC _ TARNOW 400 kV	15/01/2018	19/01/2018	
PSE	Line	TUCZNAWA _ RZESZOW 400 kV	15/01/2018	19/01/2018	
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	CHAMOSON _ MUHLEBERG "Sanetsch 2" 220 kV	24/10/2017	30/03/2018	
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	BERGSHAUSEN _ GROHNDE 1 400 kV	15/01/2018	19/01/2018	
TENNET DE	Line	GROHNDE _ ALGERMISSEN 2 400 kV	15/01/2018	17/01/2018	
TENNET DE	Line	TWISTETAL _ BORKEN 3 400 kV	16/05/2017	11/10/2018	
TENNET NL	Line	BLEISWIJK _ KRIMPEN ZT 400 kV	15/01/2018	19/01/2018	Daily
TENNET NL	Line	HENGELO _ ZWOLLE WT 400 kV	13/01/2018	19/01/2018	permanent
TERNA	Line	PIAN CAMUNO _ S.FIORANO 358 400 kV	09/01/2018	19/01/2018	Forced outage
TransnetBW	Line	NEUROTT _ PHILIPPSBURG RT 400 kV	15/01/2018	07/02/2018	

Exchange program forecasts






CSE Power Exchanges
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
0:30
1:30
2:30
3:30
4:30
5:30
6:30
7:30
8:30
9:30
10:30
11:30
12:30
13:30
14:30
15:30
16:30
17:30
18:30
19:30
20:30
21:30
22:30
23:30
FR-->IT
CH-->IT
AT-->IT
SL-->IT
FR-->CH
DE-->CH

ELIA expected flows & PSTs tap position

		Node 1	Node 2	Order	01:30	03:30	06:30	07:30	08:30	10:30	12:30	17:30	18:30	19:30	21:30	23:30
BE	FR	ACHENE	LONNY	380.19	616	305	327	397	481	254	213	193	236	264	147	139
BE	FR	AUBANGE	MONT ST MARTIN	220.51	87	11	54	108	102	44	26	8	27	44	-2	-12
BE	FR	AUBANGE	MOULAINE	220.51	70	-2	45	86	84	32	15	0	22	35	-7	-16
BE	FR	AVELGEM	AVELIN	380.80	532	249	280	427	506	206	180	-1	140	301	14	-61
BE	FR	AVELGEM	MASTAING	380.79	111	25	-34	4	42	-80	-85	-172	-114	-37	-153	-155
BE	FR	MONCEAU	CHOOZ	220.48	-45	-66	-106	-41	-26	-49	-52	-74	-64	-48	-115	-110
BE	NL	VAN EYCK 1	MAASBRACHT	380.27	-636	-447	-542	-481	-434	-311	-255	-279	-291	-295	-252	-290
BE	NL	VAN EYCK 2	MAASBRACHT	380.28	-443	-272	-335	-176	-91	87	156	177	149	89	178	141
BE	NL	ZANDVLIET	BORSSELE	380.29	-502	-360	-613	-857	-886	-772	-725	-702	-746	-619	-535	-446
BE	NL	ZANDVLIET	GEERTRUIDENBERG	380.30	-639	-349	-525	-345	-399	-135	-72	-68	-146	-220	-200	-227
BE	LU	BELVAL	SCHIFFLANGE	220.511	-15	40	-134	-156	-73	3	30	16	25	-6	55	86

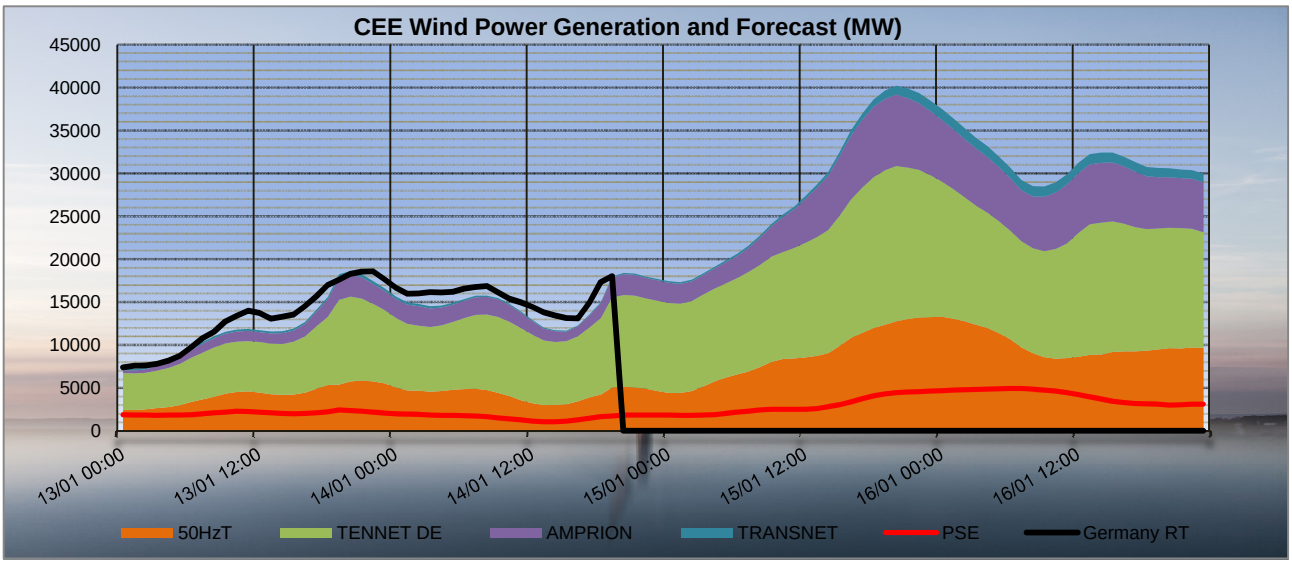
BE	FR	TOTAL			1371	522	566	981	1189	407	297	-46	247	559	-116	-215
BE	NL	TOTAL			-2220	-1428	-2015	-1859	-1810	-1131	-896	-872	-1034	-1045	-809	-822
BE	LU	TOTAL			-15	40	-134	-156	-73	3	30	16	25	-6	55	86
TOTAL BELGIAN IMPORT/EXPORT					-864	-866	-1583	-1034	-694	-721	-569	-902	-762	-492	-870	-951

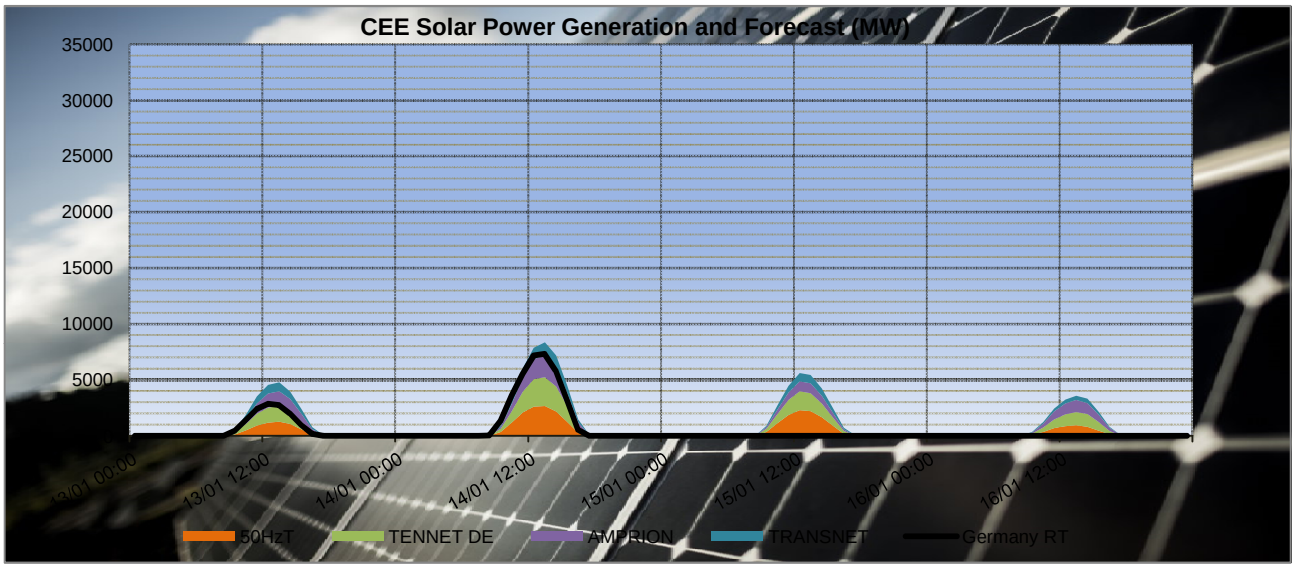
PST taps in DACF	**Zandvliet 1**	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Zandvliet 2	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Van Eyck 1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Van Eyck 2	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Average	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12

CREOS PST in DACF	**Schifflange**	14	14	14	14	14	17	17	17	17	17	17	17	17	17	17

Proposal for real time after D-1 studies																								
Timestamps		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
PSTs																								
Zandvliet PST 1	[1;35]	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Zandvliet 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
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
Schifflange PST 1	[1;35]	12	12	12	12	12	12	12	12	12	12	17	17	17	17	17	17	17	17	17	17	17	17	17

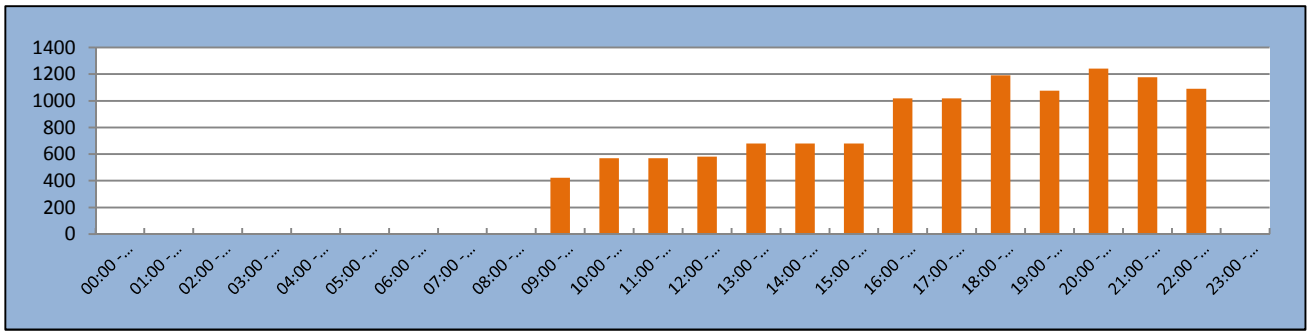
CEE Renewable Power Generation & Forecast



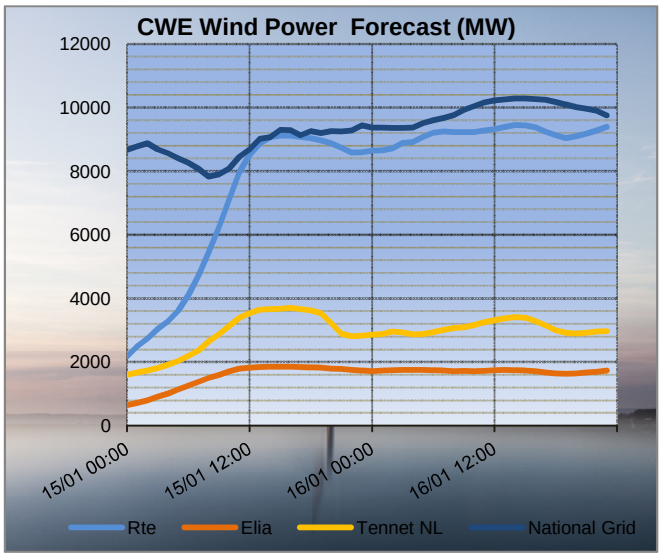


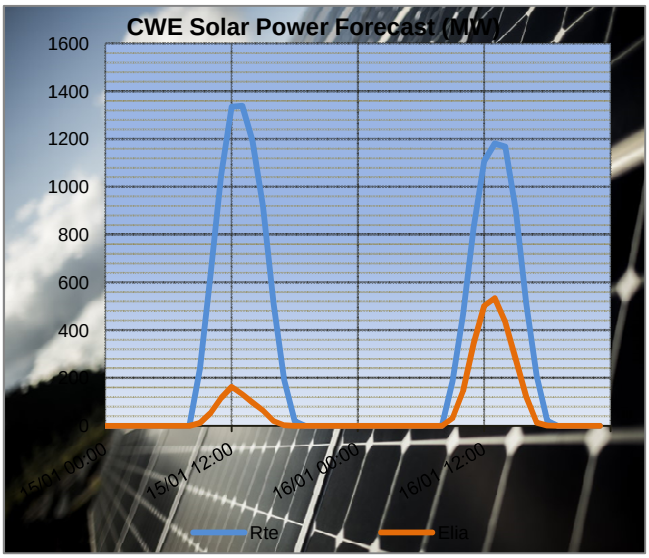
The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

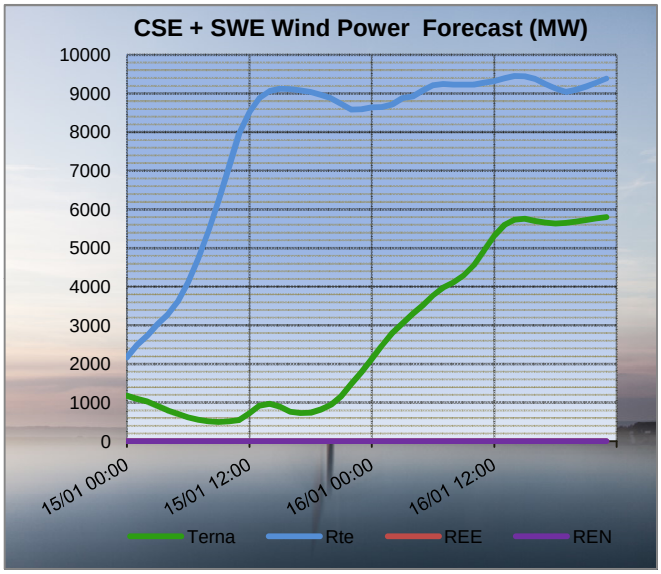
50HzT Preventive Redispatch

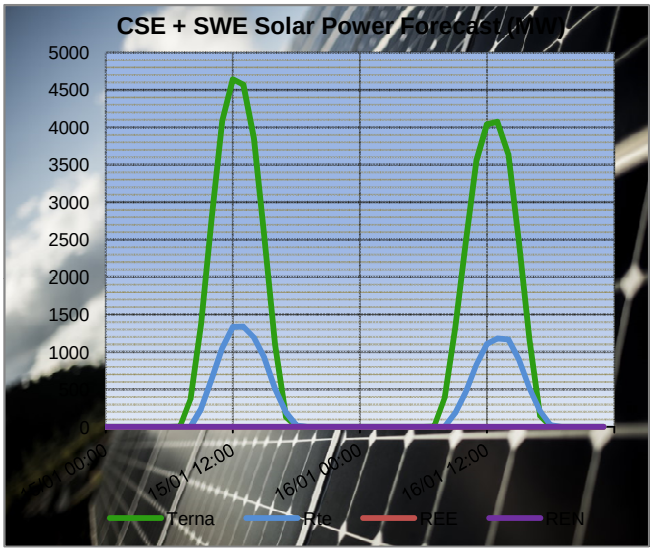


CWE, CSE & SWE Renewable Power Forecast (D-1 and D-2)









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	171	-305	**-476**	-449	-397	52	-319	-254	65	-280	-213	67
FR	BE	MONT ST MARTIN	AUBANGE	103	-11	-114	-87	-108	-21	-10	-44	-34	-3	-26	-23
FR	BE	MOULAINE	AUBANGE	109	2	-107	-66	-86	-20	0	-32	-32	7	-15	-22
FR	BE	AVELIN	AVELGEM	541	-249	**-790**	-359	-427	-68	-134	-206	-72	-142	-180	-38
FR	BE	MASTAING	AVELGEM	397	-25	**-422**	52	-4	-56	141	80	-61	125	85	-40
FR	BE	CHOOZ	MONCEAU	0	66	66	0	41	41	0	49	49	0	52	52
FR	DE	MUHLBACH	EICHSTETTEN	278	261	-17	-107	189	**296**	261	559	**298**	333	625	**292**
FR	DE	VOGELGRUN	EICHSTETTEN	9	-30	-39	-62	-11	51	7	32	25	18	43	25
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	326	-53	**-379**	-127	-159	-32	311	221	-90	366	268	-98
FR	DE	VIGY	ENSDORF 2	271	-145	**-416**	-255	-263	-8	328	271	-57	403	334	-69

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	-219	-193	26	-310	-264	46	-231	-139	92
FR	BE	MONT ST MARTIN	AUBANGE	11	-8	-19	-53	-44	9	-32	12	44
FR	BE	MOULAINE	AUBANGE	18	0	-18	-43	-35	8	-26	16	42
FR	BE	AVELIN	AVELGEM	101	1	-100	-208	-301	-93	113	61	-52
FR	BE	MASTAING	AVELGEM	250	172	-78	110	37	-73	210	155	-55
FR	BE	CHOOZ	MONCEAU	0	74	74	0	48	48	0	110	110
FR	DE	MUHLBACH	EICHSTETTEN	410	721	**311**	366	661	**295**	411	589	178
FR	DE	VOGELGRUN	EICHSTETTEN	62	72	10	45	61	16	57	62	5
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	459	271	-188	336	190	-146	366	244	-122
FR	DE	VIGY	ENSDORF 2	501	336	-165	375	253	-122	345	238	-107

				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	285	302	17	89	176	87	253	399	146	267	374	107
FR	CH	MAMBELIN	BASSECOURT	-186	-207	-21	-343	-258	85	-241	-103	138	-233	-111	122
FR	CH	SIERENTZ	BASSECOURT	426	503	77	417	422	5	384	407	23	404	416	12
FR	CH	BOIS TOLLOT	ROMANEL	145	0	-145	-99	-100	-1	97	52	-45	77	57	-20
FR	CH	SIERENTZ	LAUFENBURG	248	315	67	69	53	-16	148	248	100	159	265	106
FR	CH	CORNIER	RIDDES	-36	-40	-4	-79	-44	35	-46	14	60	-45	7	52
FR	CH	CORNIER	ST TRIPHON	-40	-44	-4	-105	-69	36	-59	-13	46	-68	-12	56
FR	CH	PRESSY	VALLORCINES	-116	-151	-35	-176	-166	10	-141	-127	14	-143	-75	68
FR	CH	BOIS TOLLOT	VERBOIS	209	212	3	217	174	-43	232	190	-42	249	205	-44
FR	CH	GENISSIAT	VERBOIS	125	91	-34	130	99	-31	190	152	-38	182	148	-34
FR	CH	GENISSIAT	VERBOIS	125	91	-34	130	99	-31	190	152	-38	182	148	-34
FR	IT	ALBERTVILLE	RONDISSONE	602	424	-178	691	587	-104	908	772	-136	865	730	-135
FR	IT	ALBERTVILLE	RONDISSONE	635	419	-216	758	625	-133	1020	848	-172	936	678	**-258**
FR	IT	MENTON	CAMPOROSSO	246	192	-54	152	203	51	157	204	47	160	196	36
FR	IT	VILLARODIN	VENAUS	120	63	-57	579	644	65	925	923	-2	739	747	8

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	259	414	155	290	409	119	336	410	74
FR	CH	MAMBELIN	BASSECOURT	-248	-97	151	-242	-98	144	-172	-49	123
FR	CH	SIERENTZ	BASSECOURT	406	442	36	385	418	33	430	452	22
FR	CH	BOIS TOLLOT	ROMANEL	41	39	-2	51	-18	-69	134	87	-47
FR	CH	SIERENTZ	LAUFENBURG	152	351	199	185	346	161	304	465	161
FR	CH	CORNIER	RIDDES	-78	-11	67	-70	-17	53	-61	5	66
FR	CH	CORNIER	ST TRIPHON	-110	-42	68	-104	-45	59	-76	-14	62
FR	CH	PRESSY	VALLORCINES	-192	-162	30	-181	-165	16	-173	-91	82
FR	CH	BOIS TOLLOT	VERBOIS	202	190	-12	157	187	30	212	234	22
FR	CH	GENISSIAT	VERBOIS	165	151	-14	135	132	-3	115	111	-4
FR	CH	GENISSIAT	VERBOIS	166	151	-15	135	132	-3	115	111	-4
FR	IT	ALBERTVILLE	RONDISSONE	856	761	-95	912	778	-134	783	478	**-305**
FR	IT	ALBERTVILLE	RONDISSONE	933	743	-190	992	826	-166	854	451	**-403**
FR	IT	MENTON	CAMPOROSSO	155	197	42	146	207	61	155	205	50
FR	IT	VILLARODIN	VENAUS	676	655	-21	877	847	-30	583	772	189

N state flows at 10:30 and 19:30

The Imax and load values in the table below are extracted from the merged TSOs' DACF.

TSO	Line (380 kV)	10:30		19:30	
		Imax (A)	% of Imax	Imax (A)	% of Imax
ELIA	Champion - Gramme (32)	2448	30	2448	28
	Doel - Mercator (51)	2239	38	2239	37
	Doel - Mercator (52)	2239	38	2239	37
	Doel - Mercator (54)	2448	38	2448	37
	Doel - Zandvliet (25)	2338	20	2349	17
	Mercator - Horta (73)	2569	29	2569	30
	Courcelles - Gramme (31)	2338	33	2349	32
	Mercator - Rodenhuize/Horta (74)	2349	32	2349	33
RTE	Attaques - Warande 2	3780	56	3780	57
	Avelin - Gavrelle	2622	39	2622	43
	Avelin - Warande	3458	12	3458	11
	Lonny - Seuil	4149	22	4149	21
	Mandarins - Warande 1	3780	53	3780	53
	Muhlbach - Scheer	2598	33	2598	37
	Revigny - Vigy	2596	30	2596	30
	Warande - Weppes	3458	18	3458	16

X < 50 % of Imax 50 ≤ X < 75 % of Imax X ≥ 75 % of Imax

TSO	Voltage	Line (380 kV)	10:30		19:30	
			Imax (A)	% of Imax	Imax (A)	% of Imax
50 HzT	380 kV	Eisenach - Mecklar (450-2)	2520	40	2520	22
		Hagenwerder - Mikulowa (567)	2520	30	2520	30
		Hagenwerder - Mikulowa (568)	2520	30	2520	30
		Remptendorf - Redwitz (413)	3572	59	3507	57
		Remptendorf - Redwitz (414)	3572	59	3507	57
		Röhrsdorf - Hradec (445)	2520	50	2520	55
		Röhrsdorf - Hradec (446)	2520	71	2520	55
		Vieselbach - Mecklar (449-1)	2520	40	2520	22
		Wolmirstedt - Helmstedt (491-1)	2400	14	2400	14
		Wolmirstedt - Helmstedt (492-2)	2400	14	2400	14
	220 kV	Vierraden - Krajnik (507)	1370	0	1370	0
		Vierraden - Krajnik (508)	1370	0	1370	0

X < 50 % of Imax 50 ≤ X < 75 % of Imax X ≥ 75 % of Imax

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	2	2
		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 / CEPS	06:30 &18:30 - 119:30	380	Röhrsdorf	Hradec	axis	106%	380	Röhrsdorf	Hradec	remaining	19:30
		Preventive action: Hradec PST tap changes with CEPS.									
50HzT	21:30 - 23:30	380	Lauchstadt	Vieselbach	535	108%	380	Lauchstadt	Vieselbach		22:30
		Preventive action: Redispatching									
50HzT	23:30	380	Bärwalde	Graustein	axis	102%	380	Bärwalde	Graustein	remaining	06:30
		Preventive action: 2 nodes inBärwalde; then redispatching.									
50HzT	21:30 - 23:30	380	Rohrsdorf	Streumen	axis	111%	380	Streumen	Röhrsdorf		22:30
		Preventive action: 2 nodes in Streumen and Vieselbach (Dopt info)									

General info: Due to the high wind infeed in Germany 12GW preventive redispatching has been implemented within the german TSOs to avoid the constraints (peak time at around 22:00)

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 DE / Amprion	all day long	380	T-line Diele-Niederlangen-Meppen			140%	380	Hanekenfähr - Doerpen West			14:30
		Note: No cascading after tripping, just -1 tap on Meeden PSTs required									
TenneT DE	01:30 & 07:30 - 10:30 & 14:30	380	Lelystad	Ens	axis	104%	380	Lelystad	Ens	remaining	07:30
		Preventive action : with two nodes in Lelystad => 91% remaining									

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	
380	Mercator	Busbar	2	129%	150	Lillo	Zandvliet		all day
Info									

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): **23:30**
- Peak period (07:00 – 23:00): **10:30**

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 : **163 MW**
- PST of Lienz adapted to **120 MW**
- PST of Camporosso adapted to **200 MW**

Peak:

- SI ➔ IT physical flow adapted to the target flow : **800 MW**
- Mendrisio-Cagno flow adapted to the schedule : **189 MW**
- PST of Lienz adapted to **120 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	2	2
		Grande Ile	1	1
	Terna	Turbigo	1	1
		Baggio	1	1
		Bovisio	2	2
		Ostiglia	1	1

N state flows Off-Peak & Peak

The Imax and load values in the table below are extracted from the **adapted** merged TSOs' DACF.

TSO	Voltage	Line (380 kV)	Off Peak		Peak	
			Imax (A)	% of Imax	Imax (A)	% of Imax
Terna	380 kV	Albertville - Rondissone 1	2370	29	2370	48
		Albertville - Rondissone 2	2370	28	2370	53
		Bulciago - Soazza	2300	40	2300	39
		Cagno - Mendrisio	855	31	855	37
		Musignano - Lavorgo	2270	61	2270	59
		Redipuglia - Divaca	2700	35	2700	34
		Robbia - San Fiorano	2530	42	2530	47
		Robbia - Gorlago	2530	52	2530	60
		Venaus - Villarodin	2715	42	2715	49
	220 kV	Airolo - Ponte	900	8	900	8
		Lienz - Soverzene	750	36	750	40
		Menton - Campo Rosso	1165	44	1165	43
		Padriciano - Divaca	960	42	960	39
		Riddes - Avise	1010	15	1010	24
		Riddes - Valpelline	1010	20	1010	28
		Serra - Pallanzeno	900	24	900	31

For Terna:

X < 50 % of Imax | 50 ≤ X < 75 % of Imax | X ≥ 75% of Imax

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	1906	3656	109	809
	Compensation ratio (calculated from NTC)	39%	49%	4%	8%
	Pentalateral impact on physical flows	-28%	-54%	-4%	-14%
Peak	Initial physical flows on adapted base case	2747	3975	121	805
	Compensation ratio (calculated from NTC)	37%	50%	4%	9%
	Pentalateral impact on physical flows	-26%	-56%	-3%	-15%

OFF PEAK

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

	TSO	Contingency				Constraint				
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code
Off Peak	RTE	380	Albertville	busbar	1A	107%(1')	220	Albertville	Longefan Randens	
		Preventive action: 1-node operation at Albertville 220kV **=> 98% remaining**								
No more constraint detected after preventive actions 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	380	Albertville	Rondissone	N-K	117%	380	La Praz	PST	
		Curative actions: increase 16 taps (1 to 17) on La Praz PST **=> 95% 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 Pentalateral reduction).

PST	Off Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	1	666
Rondissone 1 (1/33)	17	478
Rondissone 2 (1/33)	25	451
Camporosso (-32/32)	-14	205
Lienz (-32/32)	3	110
Padriciano (1/33)	15	159
Divaca (-32/32 each)	4	652

PST	Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	1	932
Rondissone 1 (1/33)	33	840
Rondissone 2 (1/33)	33	765
Camporosso (-32/32)	-7	204
Lienz (-32/32)	3	122
Padriciano (1/33)	10	152
Divaca (-32/32 each)	11	654

Conclusion

CWE: No critical constraint detected.

CEE: Due to high wind infeed high amount of preventive redispatch implemented. Additionally several 2-node topologies are required.

CSE: No critical constraints detected.