| | |
|---|---|
| ***CORESO Engineers***<br>***North :*** SANTOS Eduardo<br>***South :*** BOYER Jonathan | **Day Ahead report for**<br><br>**10 January 2018** |

**Security Levels:**

**CWE: No critical constraint detected.**

**CEE: No critical constraint detected.**

**CSE: No critical constraint detected.**


**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] | 11 500 | 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 | 2800 |
| | | | | | | 900 | 2 | |
| | | | | Schw. Pumpe | | 800 | 2 | 1600 |
| | | | | Lippendorf | | 920 | 2 | 1840 |
| **RTE** | | | RTE | Gravelines | Pmax (MW) | 900 | 6 | 5400 |
| Peak load [MW] | 75 600 | 19:00 | | 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] | 48 200 | 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] | 48 000 | 18:30 | | Cruas | | 900 | **3** | 2700 |
| 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**

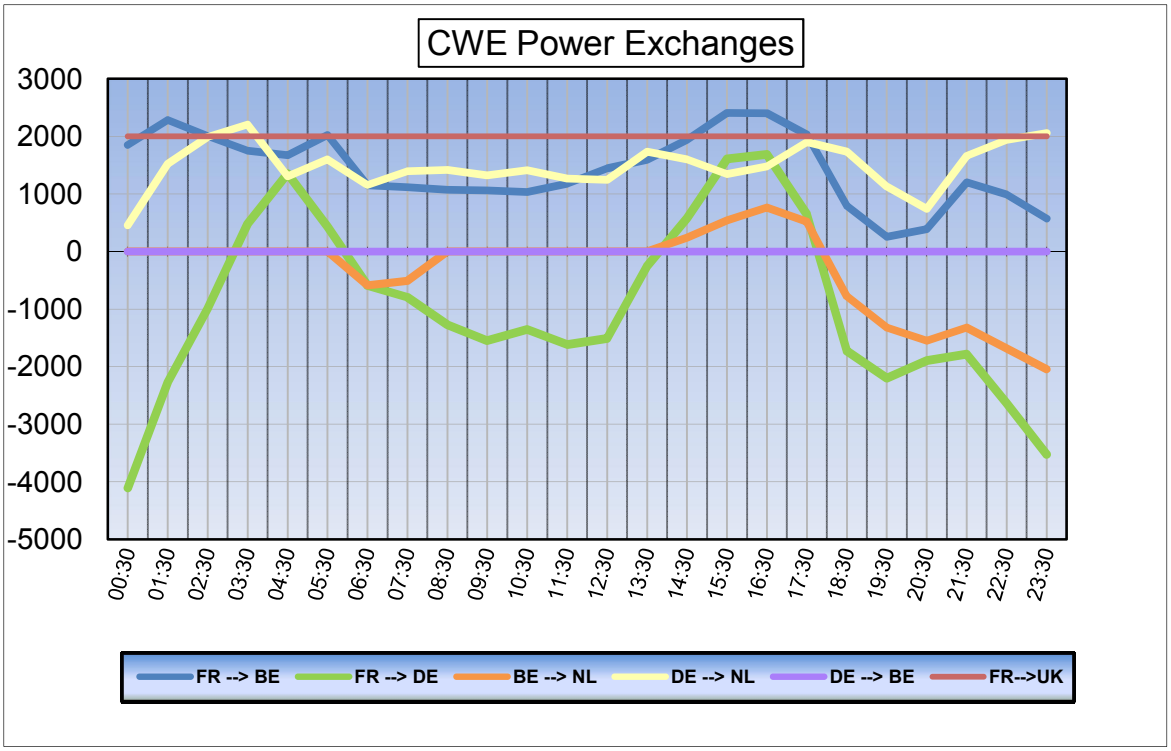
**CSE**

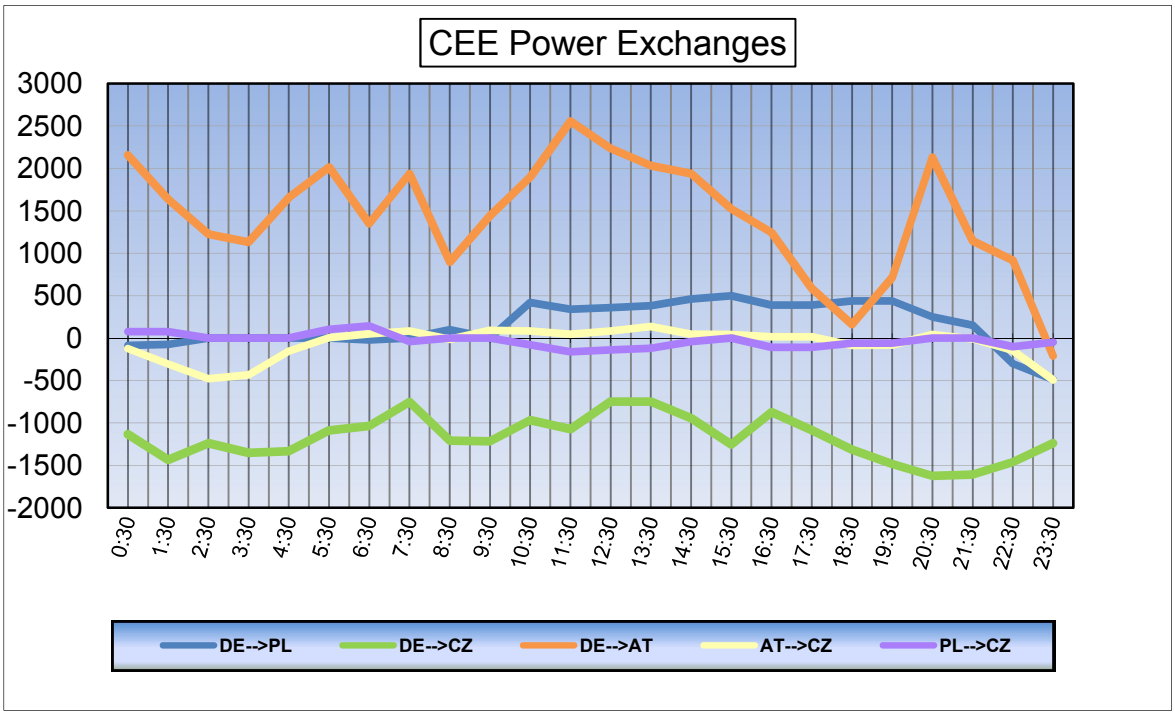
**ELES:** The PST of Divaca will be at tap -26 all day long due to technical issue.

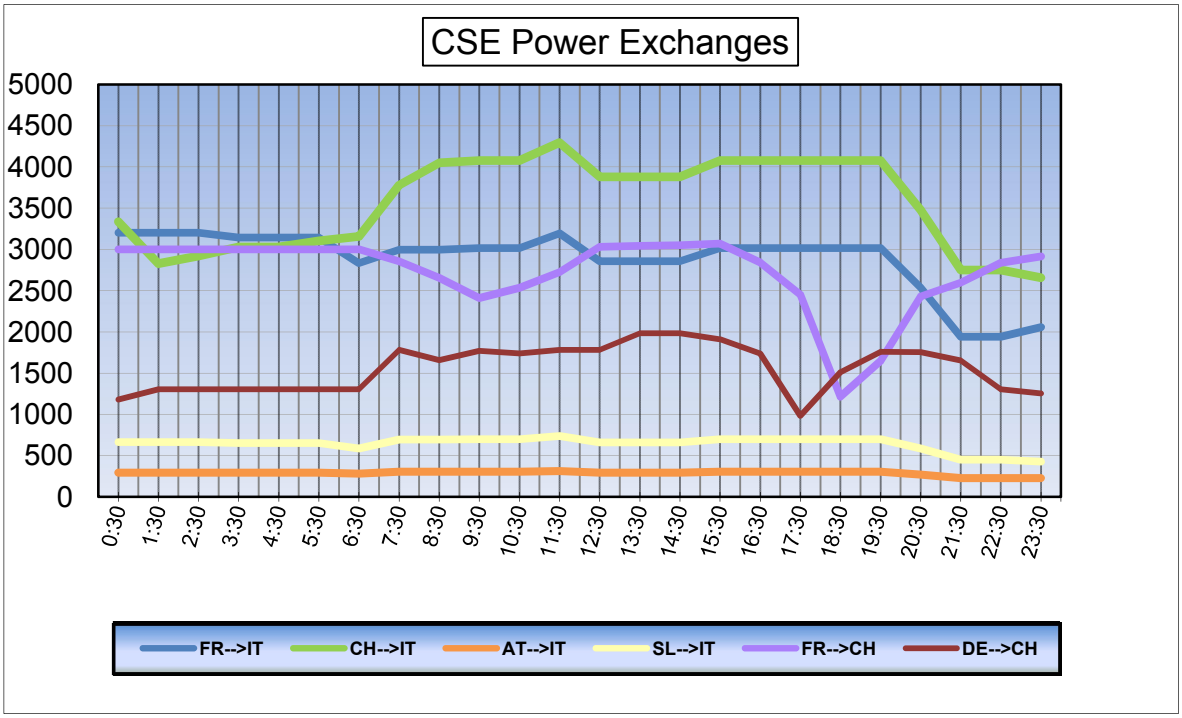
# Outages table

| 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 _ Wolkramhausen 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 | HENGELO _ 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




CSE Power Exchanges
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
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 | 00:30 | 03:30 | 07:30 | 10:30 | 12:30 | 14:30 | 16:30 | 17:30 | 19:30 | 21:30 | 22:30 | 23:30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BE | FR | ACHENE | LONNY | 380.19 | 173 | -395 | 80 | 222 | 114 | -123 | -280 | -140 | 387 | 156 | 158 | 283 |
| BE | FR | AUBANGE | MONT ST MARTIN | 220.51 | 13 | -151 | -70 | -39 | -75 | -154 | -172 | -119 | -2 | -49 | -32 | -4 |
| BE | FR | AUBANGE | MOULAINE | 220.51 | 1 | -155 | -75 | -50 | -88 | -159 | -178 | -130 | -20 | -57 | -43 | -13 |
| BE | FR | AVELGEM | AVELIN | 380.80 | -85 | -769 | -58 | 166 | 76 | -352 | -614 | -554 | 387 | -45 | -110 | -24 |
| BE | FR | AVELGEM | MASTAING | 380.79 | -191 | -458 | -263 | -185 | -234 | -406 | -522 | -509 | -99 | -262 | -295 | -234 |
| BE | FR | MONCEAU | CHOOZ | 220.48 | -119 | -205 | -99 | -52 | -64 | -108 | -144 | -148 | -34 | -187 | -191 | -162 |
| BE | NL | VAN EYCK 1 | MAASBRACHT | 380.27 | -514 | -135 | -328 | -345 | -344 | -205 | -84 | -157 | -510 | -545 | -583 | -631 |
| BE | NL | VAN EYCK 2 | MAASBRACHT | 380.28 | -186 | 304 | 100 | 147 | 97 | 338 | 558 | 596 | -136 | -191 | -234 | -343 |
| BE | NL | ZANDVLIET | BORSSELE | 380.29 | -472 | -128 | -752 | -731 | -742 | -640 | -527 | -570 | -974 | -746 | -733 | -758 |
| BE | NL | ZANDVLIET | GEERTRUIDENBERG | 380.30 | -362 | 303 | -175 | -140 | -149 | 62 | 237 | 159 | -514 | -501 | -500 | -564 |
| BE | LU | BELVAL | SCHIFFLANGE | 220.511 | -105 | 38 | 10 | -26 | -30 | 52 | 91 | 58 | -68 | -89 | -105 | -160 |

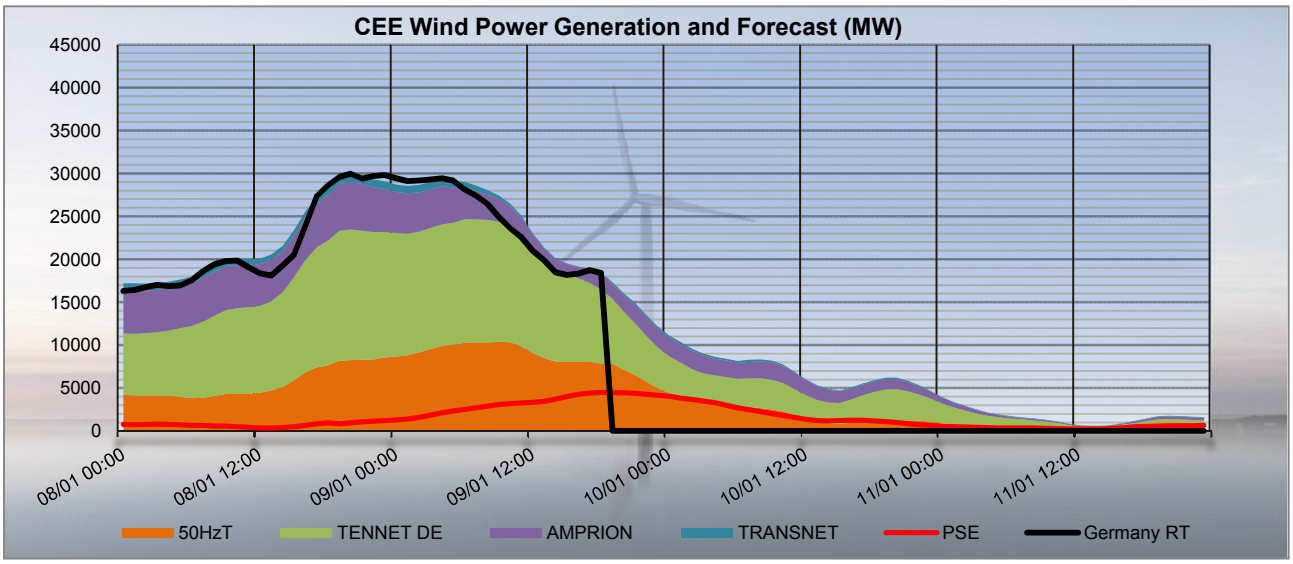
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BE | FR | TOTAL | | -208 | -2133 | -485 | 62 | -271 | -1302 | -1910 | -1600 | 619 | -444 | -513 | -154 |
| BE | NL | TOTAL | | -1534 | 344 | -1155 | -1069 | -1138 | -445 | 184 | 28 | -2134 | -1983 | -2050 | -2296 |
| BE | LU | TOTAL | | -105 | 38 | 10 | -26 | -30 | 52 | 91 | 58 | -68 | -89 | -105 | -160 |
| TOTAL BELGIAN IMPORT/EXPORT | | | | -1847 | -1751 | -1630 | -1033 | -1439 | -1695 | -1635 | -1514 | -1583 | -2516 | -2668 | -2610 |

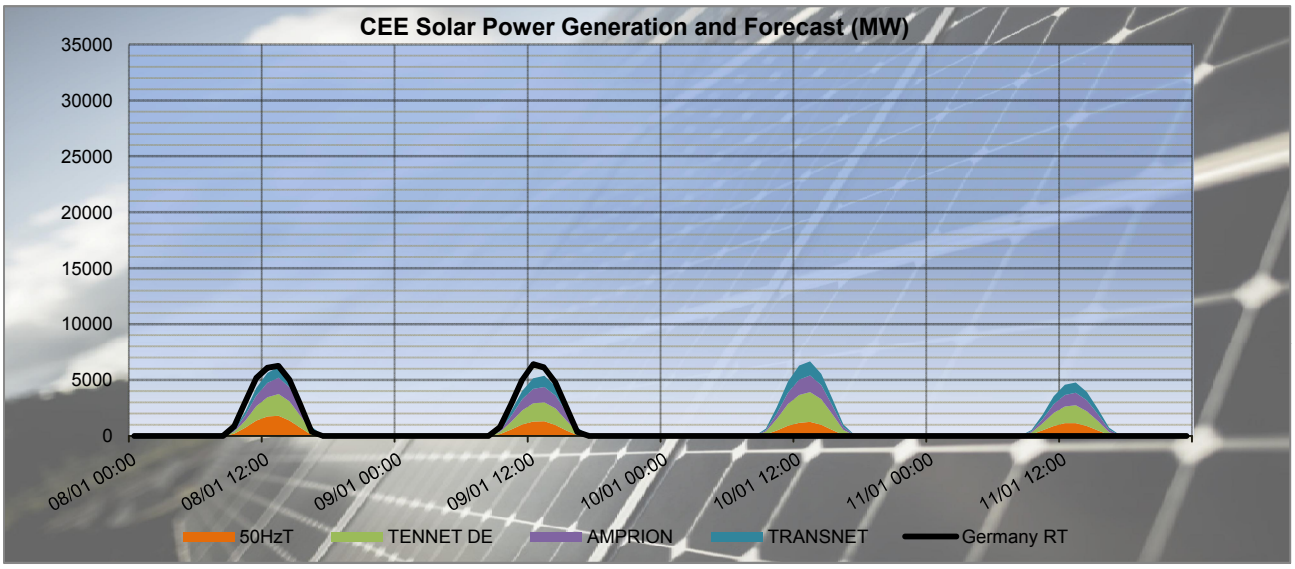
| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PST taps in DACF | **Zandvliet 1** | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| | **Zandvliet 2** | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |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

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CREOS PST in DACF | **Schifflange** | 17 | 17 | 17 | 17 | 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 | 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 | 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 | 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 | 12 |
| **Schifflange 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 | 17 |

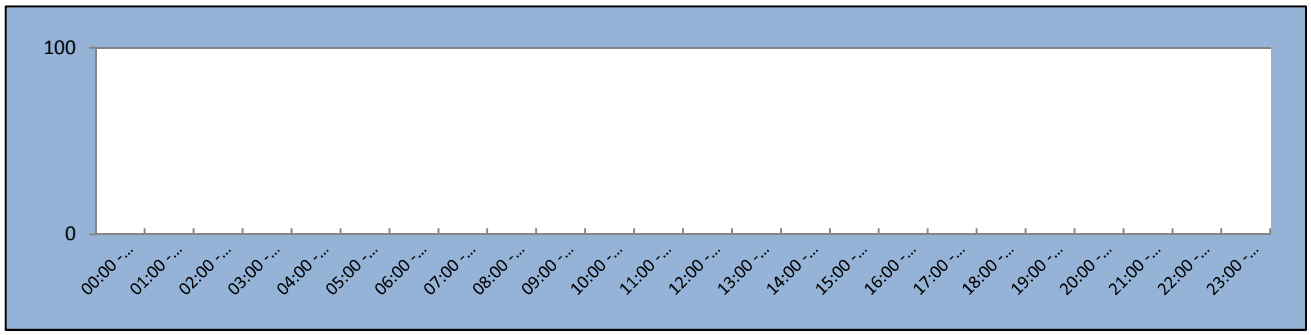
## CEE Renewable Power Generation & Forecast



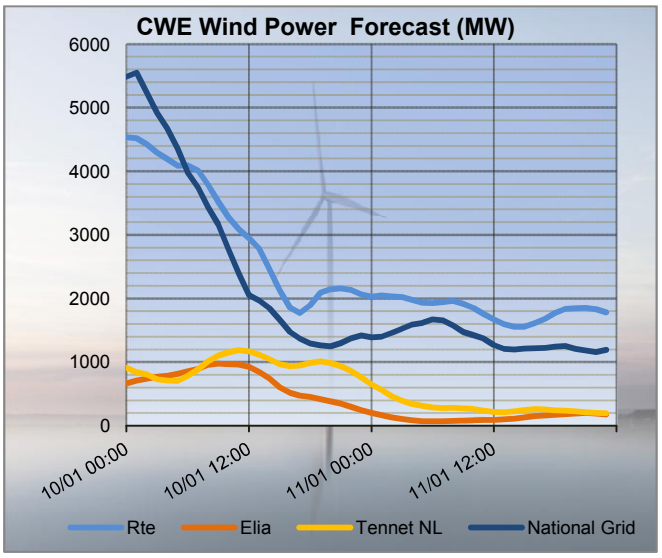



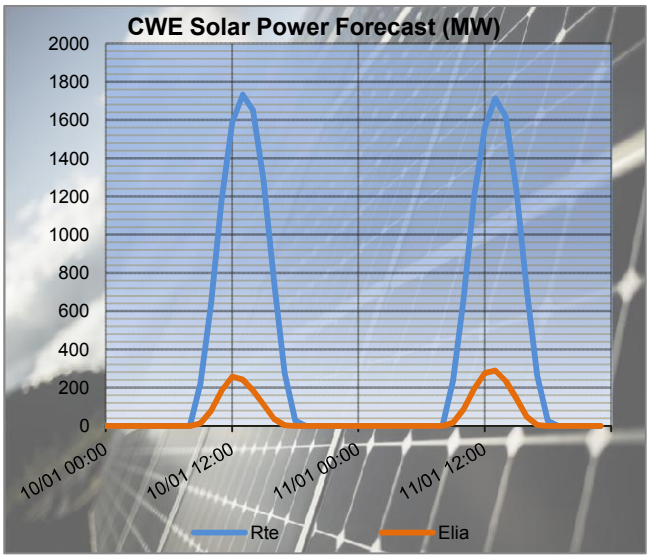

The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

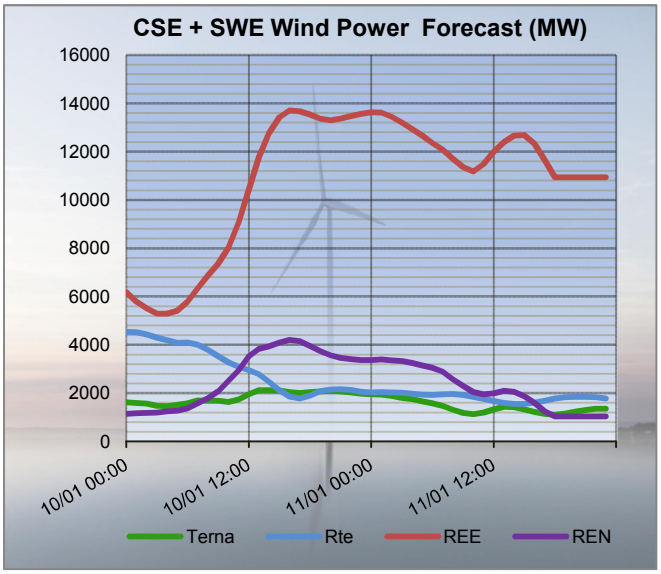
## 50HzT Preventive Redispatch

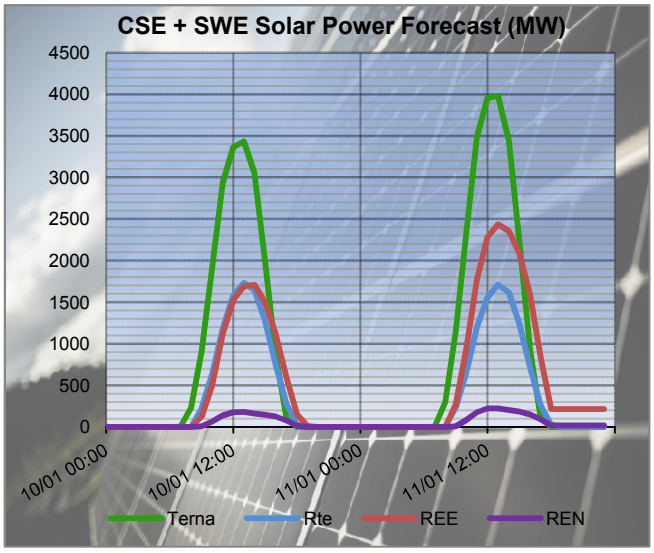


## CWE, CSE & SWE Renewable Power Forecast (D-1 and D-2)




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 | 448 | 395 | -53 | 22 | -80 | -102 | -163 | -222 | -59 | -60 | -114 | -54 |
| FR | BE | MONT ST MARTIN | AUBANGE | 97 | 151 | 54 | 49 | 70 | 21 | 38 | 39 | 1 | 44 | 75 | 31 |
| FR | BE | MOULAINE | AUBANGE | 104 | 155 | 51 | 55 | 75 | 20 | 49 | 50 | 1 | 58 | 88 | 30 |
| FR | BE | AVELIN | AVELGEM | 924 | 769 | -155 | 307 | 58 | -249 | 13 | -166 | -179 | 186 | -76 | -262 |
| FR | BE | MASTAING | AVELGEM | 577 | 458 | -119 | 432 | 263 | -169 | 301 | 185 | -116 | 408 | 234 | -174 |
| FR | BE | CHOOZ | MONCEAU | 206 | 205 | -1 | 191 | 99 | -92 | 146 | 52 | -94 | 190 | 64 | -126 |
| FR | DE | MUHLBACH | EICHSTETTEN | 483 | 558 | 75 | 361 | 514 | 153 | 256 | 426 | 170 | 225 | 429 | 204 |
| FR | DE | VOGELGRUN | EICHSTETTEN | 7 | 61 | 54 | -31 | 52 | 83 | -28 | 26 | 54 | -2 | 27 | 29 |
| FR | DE | ST AVOLD | ENSDORF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FR | DE | VIGY | ENSDORF 1 | 412 | 480 | 68 | 142 | 306 | 164 | 204 | 223 | 19 | 265 | 253 | -12 |
| FR | DE | VIGY | ENSDORF 2 | 197 | 284 | 87 | 202 | 397 | 195 | 299 | 335 | 36 | 370 | 386 | 16 |

| | | | | 17:30 | | | 19:30 | | | 23:30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Node 1 | Node 2 | DACF | Merge | Delta | DACF | Merge | Delta | DACF | Merge | Delta |
| FR | BE | LONNY | ACHENE | 357 | 140 | -217 | -195 | -387 | -192 | -205 | -283 | -78 |
| FR | BE | MONT ST MARTIN | AUBANGE | 143 | 119 | -24 | 34 | 2 | -32 | 42 | 4 | -38 |
| FR | BE | MOULAINE | AUBANGE | 153 | 130 | -23 | 50 | 20 | -30 | 48 | 13 | -35 |
| FR | BE | AVELIN | AVELGEM | 663 | 554 | -109 | -322 | -387 | -65 | 205 | 24 | -181 |
| FR | BE | MASTAING | AVELGEM | 584 | 509 | -75 | 137 | 99 | -38 | 361 | 234 | -127 |
| FR | BE | CHOOZ | MONCEAU | 227 | 148 | -79 | 134 | 34 | -100 | 181 | 162 | -19 |
| FR | DE | MUHLBACH | EICHSTETTEN | 393 | 547 | 154 | -29 | 173 | 202 | -168 | 27 | 195 |
| FR | DE | VOGELGRUN | EICHSTETTEN | 54 | 80 | 26 | -76 | 1 | 77 | -72 | 2 | 74 |
| FR | DE | ST AVOLD | ENSDORF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FR | DE | VIGY | ENSDORF 1 | 646 | 610 | -36 | -53 | 24 | 77 | -237 | -99 | 138 |
| FR | DE | VIGY | ENSDORF 2 | 790 | 785 | -5 | -30 | 88 | 118 | -343 | -175 | 168 |

| | | | | 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 | 452 | 454 | 2 | 335 | 355 | 20 | 253 | 310 | 57 | 206 | 326 | 120 |
| FR | CH | MAMBELIN | BASSECOURT | 3 | 45 | 42 | -153 | -127 | 26 | -212 | -161 | 51 | -186 | -112 | 74 |
| FR | CH | SIERENTZ | BASSECOURT | 344 | 369 | 25 | 426 | 415 | -11 | 388 | 429 | 41 | 402 | 419 | 17 |
| FR | CH | BOIS TOLLOT | ROMANEL | 250 | 308 | 58 | 146 | 205 | 59 | 97 | 172 | 75 | 150 | 217 | 67 |
| FR | CH | SIERENTZ | LAUFENBURG | 416 | 385 | -31 | 248 | 201 | -47 | 227 | 170 | -57 | 138 | 211 | 73 |
| FR | CH | CORNIER | RIDDES | 21 | 75 | 54 | 5 | 62 | 57 | -29 | 34 | 63 | -9 | 55 | 64 |
| FR | CH | CORNIER | ST TRIPHON | 6 | 73 | 67 | -13 | 60 | 73 | -72 | 36 | 108 | -52 | 56 | 108 |
| FR | CH | PRESSY | VALLORCINES | -69 | 16 | 85 | -62 | 18 | 80 | -135 | -30 | 105 | -108 | -5 | 103 |
| FR | CH | BOIS TOLLOT | VERBOIS | 158 | 134 | -24 | 192 | 229 | 37 | 156 | 239 | 83 | 210 | 257 | 47 |
| FR | CH | GENISSIAT | VERBOIS | 168 | 162 | -6 | 144 | 175 | 31 | 121 | 180 | 59 | 146 | 184 | 38 |
| FR | CH | GENISSIAT | VERBOIS | 168 | 162 | -6 | 144 | 175 | 31 | 121 | 180 | 59 | 146 | 184 | 38 |
| FR | IT | ALBERTVILLE | RONDISSONE | 1125 | 938 | -187 | 1119 | 900 | -219 | 1175 | 866 | -309 | 1133 | 879 | -254 |
| FR | IT | ALBERTVILLE | RONDISSONE | 1125 | 895 | -230 | 1119 | 858 | -261 | 1175 | 823 | -352 | 1134 | 851 | -283 |
| FR | IT | MENTON | CAMPOROSSO | 253 | 601 | 348 | 149 | 493 | 344 | 141 | 666 | 525 | 148 | 590 | 442 |
| FR | IT | VILLARODIN | VENAUS | 342 | 242 | -100 | 480 | 406 | -74 | 580 | 376 | -204 | 540 | 344 | -196 |

| | | | | 17:30 | | | 19:30 | | | 23:30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Node 1 | Node 2 | DACF | Merge | Delta | DACF | Merge | Delta | DACF | Merge | Delta |
| FR | CH | SIERENTZ | ASPHARD | 190 | 376 | 186 | 70 | 197 | 127 | 48 | 116 | 68 |
| FR | CH | MAMBELIN | BASSECOURT | -126 | -23 | 103 | -328 | -263 | 65 | -304 | -254 | 50 |
| FR | CH | SIERENTZ | BASSECOURT | 286 | 324 | 38 | 426 | 389 | -37 | 434 | 411 | -23 |
| FR | CH | BOIS TOLLOT | ROMANEL | 163 | 167 | 4 | 33 | 20 | -13 | 49 | 24 | -25 |
| FR | CH | SIERENTZ | LAUFENBURG | 56 | 173 | 117 | -11 | 66 | 77 | 75 | 79 | 4 |
| FR | CH | CORNIER | RIDDES | -8 | 38 | 46 | -65 | -14 | 51 | -68 | -35 | 33 |
| FR | CH | CORNIER | ST TRIPHON | -37 | 31 | 68 | -98 | -31 | 67 | -98 | -37 | 61 |
| FR | CH | PRESSY | VALLORCINES | -91 | -47 | 44 | -155 | -92 | 63 | -181 | -124 | 57 |
| FR | CH | BOIS TOLLOT | VERBOIS | 214 | 217 | 3 | 168 | 199 | 31 | 153 | 215 | 62 |
| FR | CH | GENISSIAT | VERBOIS | 158 | 158 | 0 | 126 | 135 | 9 | 86 | 112 | 26 |
| FR | CH | GENISSIAT | VERBOIS | 158 | 158 | 0 | 126 | 135 | 9 | 86 | 112 | 26 |
| FR | IT | ALBERTVILLE | RONDISSONE | 1177 | 991 | -186 | 1017 | 758 | -259 | 765 | 565 | -200 |
| FR | IT | ALBERTVILLE | RONDISSONE | 1178 | 950 | -228 | 1018 | 729 | -289 | 766 | 533 | -233 |
| FR | IT | MENTON | CAMPOROSSO | 157 | 529 | 372 | 145 | 488 | 343 | 156 | 375 | 219 |
| FR | IT | VILLARODIN | VENAUS | 563 | 492 | -71 | 479 | 346 | -133 | 80 | 20 | -60 |

## 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 | 37 | 2448 | 38 |
| | Doel - Mercator (51) | 2239 | 36 | 2239 | 46 |
| | Doel - Mercator (52) | 2239 | 36 | 2239 | 46 |
| | Doel - Mercator (54) | 2448 | 36 | 2448 | 46 |
| | Doel - Zandvliet (25) | 2349 | 17 | 2349 | 35 |
| | Mercator - Horta (73) | 2569 | 28 | 2569 | 46 |
| | Courcelles - Gramme (31) | 2330 | 39 | 2349 | 40 |
| | Mercator - Rodenhuize/Horta (74) | 2342 | 31 | 2349 | 52 |
| RTE | Attaques - Warande 2 | 3780 | 56 | 3780 | 57 |
| | Avelin - Gavrelle | 2622 | 40 | 2622 | 52 |
| | Avelin - Warande | 3458 | 10 | 3458 | 6 |
| | Lonny - Seuil | 4149 | 23 | 4149 | 26 |
| | Mandarins - Warande 1 | 3780 | 53 | 3780 | 53 |
| | Muhlbach - Scheer | 2598 | 32 | 2598 | 25 |
| | Revigny - Vigy | 2596 | 40 | 2596 | 44 |
| | Warande - Weppes | 3458 | 16 | 3458 | 12 |

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 | 13 | 2520 | 19 |
| | | Hagenwerder - Mikulowa (567) | 2520 | 11 | 2520 | 9 |
| | | Hagenwerder - Mikulowa (568) | 2520 | 11 | 2520 | 9 |
| | | Remptendorf - Redwitz (413) | 3440 | 36 | 3485 | 39 |
| | | Remptendorf - Redwitz (414) | 3440 | 36 | 3485 | 39 |
| | | Röhrsdorf - Hradec (445) | 2520 | 19 | 2520 | 15 |
| | | Röhrsdorf - Hradec (446) | 2520 | 19 | 2520 | 15 |
| | | Vieselbach - Mecklar (449-1) | 2520 | 17 | 2520 | 23 |
| | | Wolmirstedt - Helmstedt (491-1) | 2400 | 6 | 2400 | 6 |
| | | Wolmirstedt - Helmstedt (492-2) | 2400 | 6 | 2400 | 6 |
| | 220 kV | Vierraden - Krajnik (507) | 1361 | 0 | 1352 | 0 |
| | | Vierraden - Krajnik (508) | 1361 | 0 | 1352 | 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 | 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 | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

***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 | |
| 400 | Avelgem | Busbar | 1 | 105% | 150 | Koksijde | Slykens | | 08:00 - 12:00 |
| 400 | Avelgem | Busbar | 2 | 130% | 150 | Langerbrugge | Nieuwvaart | | 07:00 - 15:00 |
| 400 | Mercator | Busbar | 2A | 125% | 150 | Lillo | Zandvliet | | 06:00 - 24:00 |

## 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): **03:30**
- Peak period (07:00 – 23:00): **11:30**

Adaptations made on merged DACFs:

**Off-peak:**

- SI ➔ IT physical flow adapted to the target flow : **1000 MW , Divaca PST forced to tap -26**
- Mendrisio-Cagno flow adapted to the schedule : **150 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 , Divaca PST forced to tap -26**
- 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 | **1** | **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 | 63 | 2370 | 62 |
| | | Albertville - Rondissone 2 | 2370 | 61 | 2370 | 60 |
| | | Bulciago - Soazza | 2300 | 39 | 2300 | 58 |
| | | Cagno - Mendrisio | 855 | 29 | 855 | 42 |
| | | Musignano - Lavorgo | 2270 | 53 | 2270 | 71 |
| | | Redipuglia - Divaca | 2700 | 41 | 2700 | 33 |
| | | Robbia - San Fiorano | 2530 | 36 | 2530 | 61 |
| | | Robbia - Gorlago | 2530 | 45 | 2530 | 69 |
| | | Venaus - Villarodin | 2715 | 19 | 2715 | 27 |
| | 220 kV | Airolo - Ponte | 900 | 6 | 900 | 14 |
| | | Lienz - Soverzene | 750 | 52 | 750 | 51 |
| | | Menton - Campo Rosso | 1165 | 29 | 1165 | 35 |
| | | Padriciano - Divaca | 960 | 71 | 960 | 60 |
| | | Riddes - Avise | 1010 | 32 | 1010 | 34 |
| | | Riddes - Valpelline | 1010 | 36 | 1010 | 36 |
| | | Serra - Pallanzeno | 900 | 30 | 900 | 40 |

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 | 2453 | 3530 | 153 | 1054 |
| | Compensation ratio (calculated from NTC) | 40% | 49% | 4% | 8% |
| | Pentalateral impact on physical flows | -24% | -60% | -3% | -13% |
| Peak | Initial physical flows on adapted base case | 2584 | 4963 | 152 | 838 |
| | Compensation ratio (calculated from NTC) | 37% | 50% | 4% | 9% |
| | Pentalateral impact on physical flows | -26% | -56% | -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 | 380 | Albertville | Grande Ile | N-K | 96% 1' | 380 | Albertville | Grande Ile | remaining |
| | | **Preventive action :** 2 nodes in Albertville => 80% remaining. | | | | | | | | |
| | RTE | 380 | Alberville | Busbar | 1A | 98% 1' | 220 | Alberville | Longefan | |
| | | **Preventive action :** Increase 3 taps on La Praz PST => 105% 10' remaining.<br>**Curative action :** open the 220kV line Saussaz - Vieux moulin => 85% remaining. | | | | | | | | |

## *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 | Grande Ile | N-K | 96% 10' | 380 | Albertville | Grande Ile | remaining |
| | | **Curative action :** 2 nodes in Albertville => 77% 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) | 17 | 339 |
| Rondissone 1 (1/33) | 29 | 958 |
| Rondissone 2 (1/33) | 32 | 998 |
| Camporosso (-32/32) | 5 | 137 |
| Lienz (-32/32) | -7 | 155 |
| Padriciano (1/33) | 33 | 275 |
| Divaca (-32/32 each) | -26 | 782 |

| PST | Peak | |
|---|---|---|
| | Tap position | Physical flow to Italy (MW) |
| La Praz (1/33) | 17 | 498 |
| Rondissone 1 (1/33) | 30 | 943 |
| Rondissone 2 (1/33) | 32 | 969 |
| Camporosso (-32/32) | 7 | 155 |
| Lienz (-32/32) | -17 | 154 |
| Padriciano (1/33) | 33 | 229 |
| Divaca (-32/32 each) | -26 | 610 |

## Conclusion

CWE: No critical constraint detected.
CEE: No critical constraint detected.
CSE: No critical constraint detected.