| | |
|---|---|
| ***CORESO Engineers***<br>***North :*** SANTOS Eduardo<br>***South :*** MÜHLING Philipp | **Day Ahead report for**<br><br>**19 January 2018** |

**Security Levels:**

**CWE: No critical constraints detected.**

**CEE: No critical constraints detected.**

**CSE: Situation is tense due to the ongoing forced outage of Sils-Soazza. To manage constraints on 380 kV grid on IT - CH border, a pentalateral reduction of 300 MW is needed. (To manage overloads on the Swiss 220 kV grid after this incident, an increase of this amount up to 1000 MW might be requested).**


**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] | 10700 | 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 | 2800 |
| | | | | | | 900 | 2 | |
| | | | | Schw. Pumpe | | 800 | **1** | 800 |
| | | | | Lippendorf | | 920 | 2 | 1840 |
| **RTE** | | | RTE | Gravelines | Pmax (MW) | 900 | 6 | 5400 |
| Peak load [MW] | 75800 | 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] | 47000 | 17:20 | | 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] | 46900 | 18:30 | | 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**

**SWG:** The line Sils - Soazza 380kV tripped at 16/01 and was considered in outage during all day, during the day tests will be performed and the line might be put back into service. The tie lines 220kV Serra - Pallanzerno - Morel and 220kV Airolo - Ponte - Fiesch couldn't be visited till this evening, so no return date known at tis point.

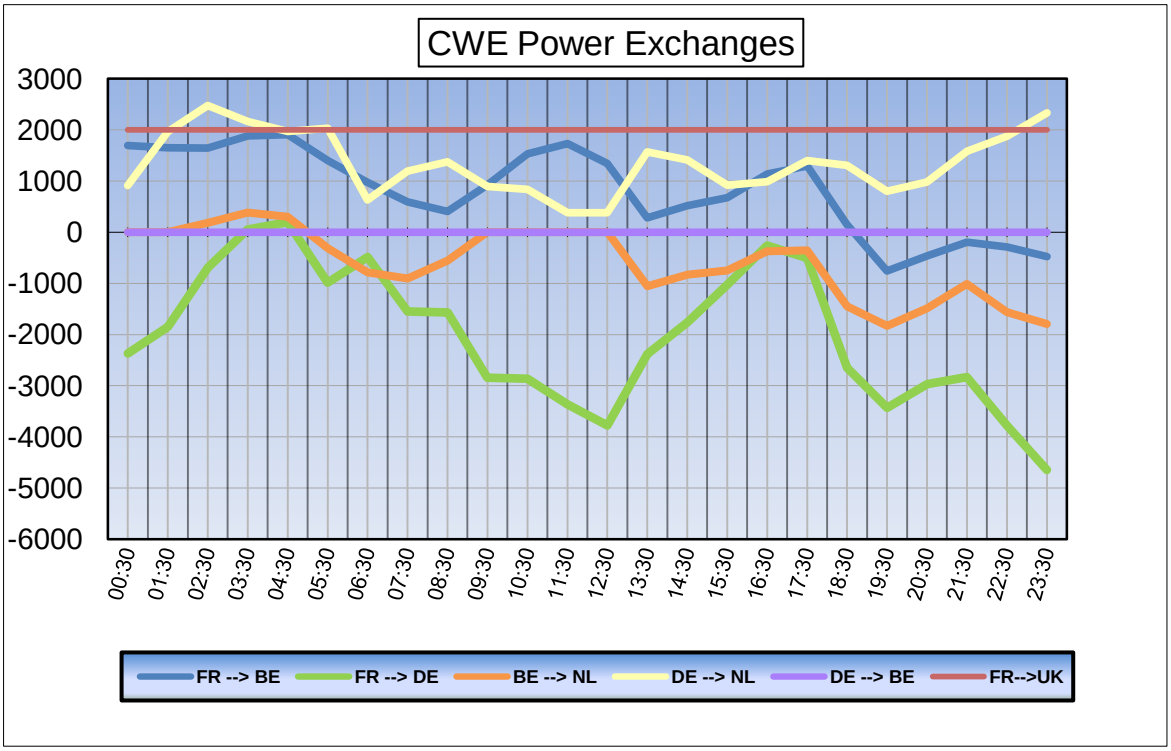
**CSE**

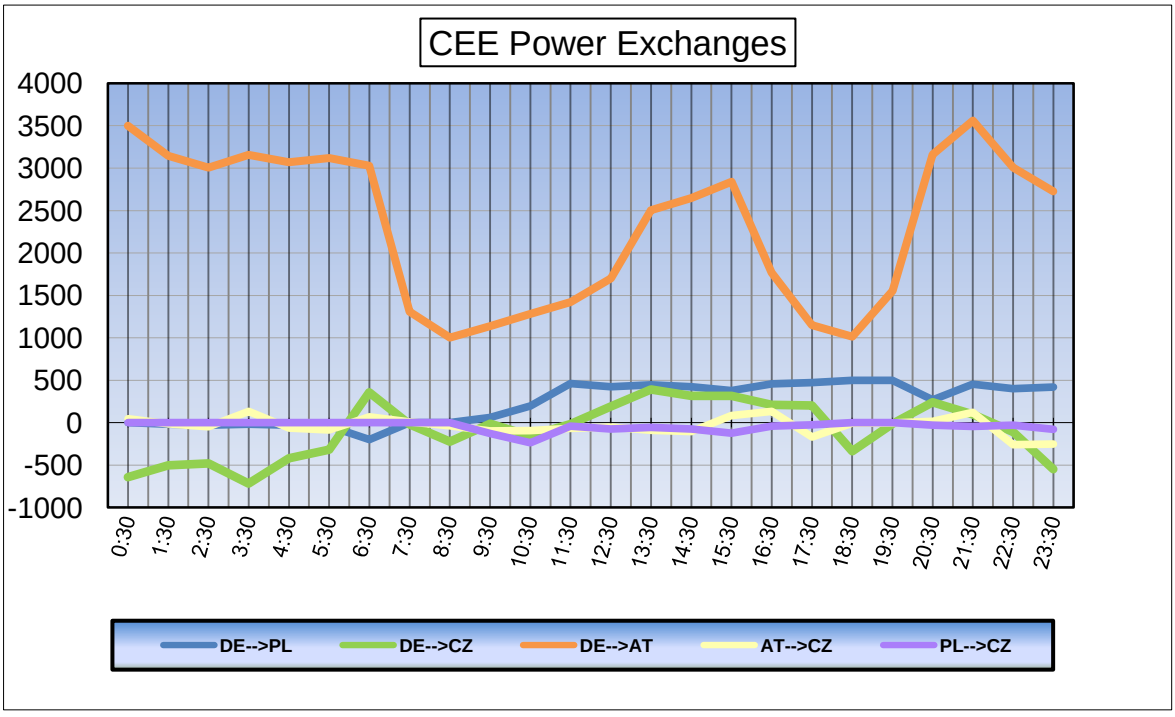
**Eles:** An increase of the target flow from 800MW to 1200MW is possible all hours of the day. That has been confirmed from APG.

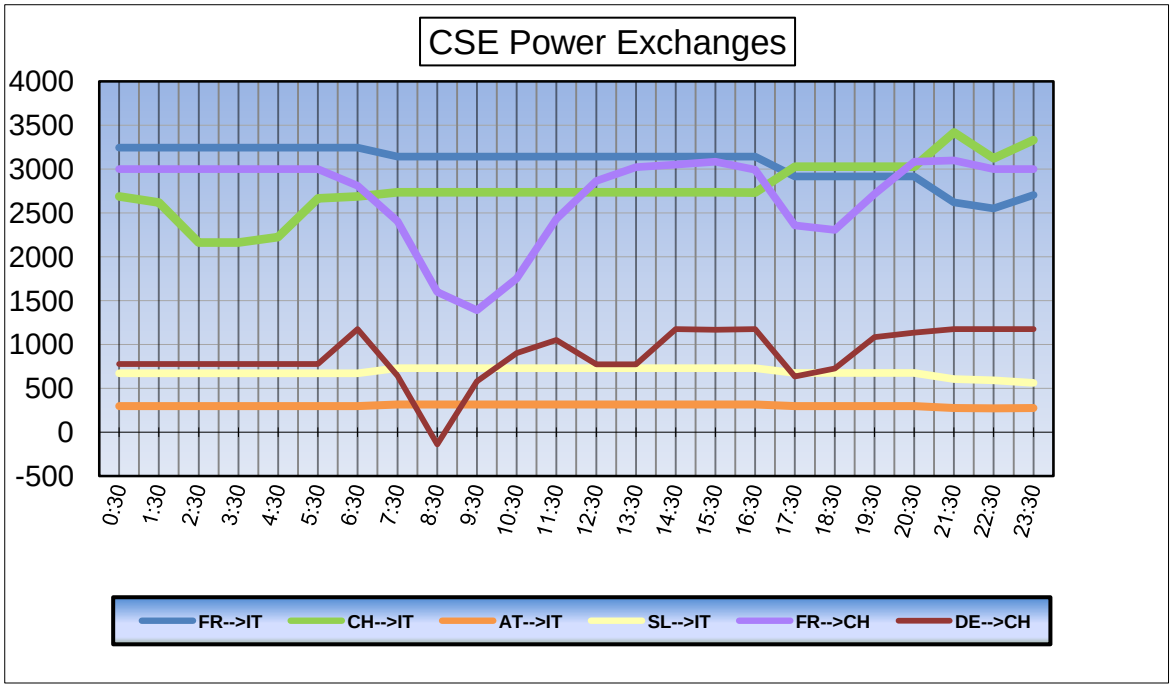
# Outages table

| 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 | EULA _ Wolkramhausen 357 220 kV | 06/10/2017 | 16/03/2018 | |
| 50HzT | Line | HAGENWERDER _ SCHMÖLLN 553 400 kV | 18/01/2018 | 19/01/2018 | |
| 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 / CEPS | Line | HRADEC VYCHOD _ ROHRSDORF 445 400 kV | 18/01/2018 | 19/01/2018 | |
| 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 |
| AMP / TEN DE | Line | NEHDEN _ TWISTETAL W 400 kV | 08/01/2018 | 23/02/2018 | |
| AMPRION | Line | NEHDEN _ ARPE Sud 400 kV | 15/01/2018 | 02/02/2018 | |
| 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 |
| 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 |
| HOPS | Line | BRINJE _ KONJSKO 220 kV | 17/01/2018 | 27/01/2018 | |
| PSE | Line | DUNOWO _ SLUPSK 400 kV | 18/01/2018 | 21/01/2018 | |
| 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 _ KLEIN ILSEDE 1 400 kV | 18/01/2018 | 26/02/2018 | |
| TENNET DE | Line | ISAR _ OTTENHOFEN 444 400 kV | 18/01/2018 | 19/01/2018 | |
| TENNET DE | Line | ISAR _ OTTENHOFEN 446 400 kV | 18/01/2018 | 19/01/2018 | |
| TENNET DE | Line | TWISTETAL _ BORKEN 3 400 kV | 16/05/2017 | 11/10/2018 | |
| TENNET DE | Line | WAHLE _ ALGERMISSEN 2 400 kV | 18/01/2018 | 26/01/2018 | |
| TENNET DE | Line | WAHLE _ KLEIN ILSEDE 3 380 kV | 18/01/2018 | 21/01/2018 | |
| 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 |
| TERNA | PST | RONDISSONE _ PST1 400 kV | 15/01/2018 | 19/01/2018 | From 23h till 06h every day |
| TERNA | PST | RONDISSONE _ PST2 400 kV | 15/01/2018 | 19/01/2018 | From 23h till 06h every day |
| TransnetBW | Line | NEUROTT _ PHILIPPSBURG RT 400 kV | 15/01/2018 | 07/02/2018 | |

## Exchange program forecasts




CSE Power Exchanges
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 | 03:30 | 04:30 | 06:30 | 07:30 | 08:30 | 10:30 | 12:30 | 13:30 | 17:30 | 19:30 | 21:30 | 23:30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BE | FR | ACHENE | LONNY | 380.19 | -428 | -416 | -28 | 36 | 104 | 50 | 154 | 183 | -134 | 432 | 331 | 406 |
| BE | FR | AUBANGE | MONT ST MARTIN | 220.51 | -201 | -189 | -28 | -49 | -48 | -48 | -13 | -18 | -62 | 86 | 76 | 94 |
| BE | FR | AUBANGE | MOULAINE | 220.51 | -206 | -191 | -40 | -61 | -58 | -61 | -27 | -34 | -70 | 74 | 65 | 78 |
| BE | FR | AVELGEM | AVELIN | 380.80 | -699 | -756 | -323 | -109 | -54 | 13 | 165 | 148 | -356 | 566 | 286 | 418 |
| BE | FR | AVELGEM | MASTAING | 380.79 | -413 | -419 | -254 | -204 | -196 | -150 | -44 | -40 | -291 | 143 | 22 | 47 |
| BE | FR | MONCEAU | CHOOZ | 220.48 | -218 | -214 | -179 | -174 | -184 | -173 | -134 | -126 | -202 | -87 | -92 | -117 |
| BE | NL | VAN EYCK 1 | MAASBRACHT | 380.27 | -99 | -104 | -285 | -324 | -285 | -378 | -388 | -387 | -249 | -504 | -414 | -599 |
| BE | NL | VAN EYCK 2 | MAASBRACHT | 380.28 | 360 | 332 | 165 | 176 | 365 | 65 | -60 | -75 | 292 | -279 | -109 | -363 |
| BE | NL | ZANDVLIET | BORSSELE | 380.29 | -112 | -126 | -726 | -730 | -669 | -713 | -785 | -788 | -620 | -928 | -609 | -668 |
| BE | NL | ZANDVLIET | GEERTRUIDENBERG | 380.30 | 404 | 376 | -28 | -15 | 80 | -38 | -120 | -128 | 111 | -425 | -252 | -443 |
| BE | LU | BELVAL | SCHIFFLANGE | 220.511 | 88 | 89 | -21 | -28 | -5 | -86 | -83 | -56 | -51 | -134 | -107 | -193 |

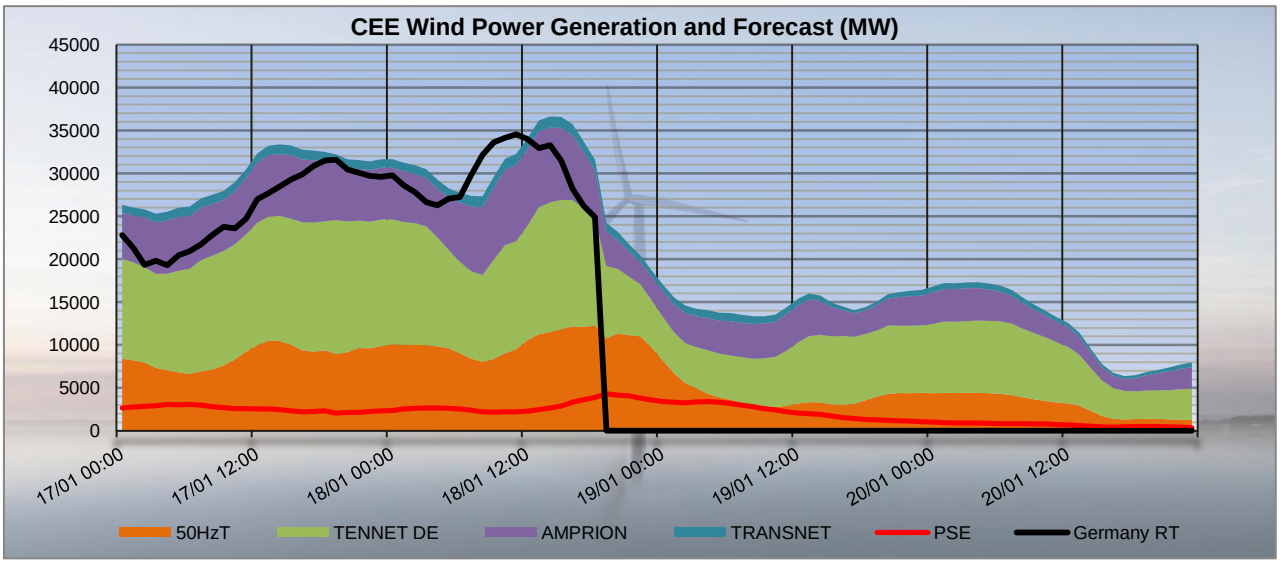
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BE | FR | TOTAL | | -2165 | -2185 | -852 | -561 | -436 | -369 | 101 | 113 | -1115 | 1214 | 688 | 926 |
| BE | NL | TOTAL | | 553 | 478 | -874 | -893 | -509 | -1064 | -1353 | -1378 | -466 | -2136 | -1384 | -2073 |
| BE | LU | TOTAL | | 88 | 89 | -21 | -28 | -5 | -86 | -83 | -56 | -51 | -134 | -107 | -193 |
| TOTAL BELGIAN IMPORT/EXPORT | | | | -1524 | -1618 | -1747 | -1482 | -950 | -1519 | -1335 | -1321 | -1632 | -1056 | -803 | -1340 |

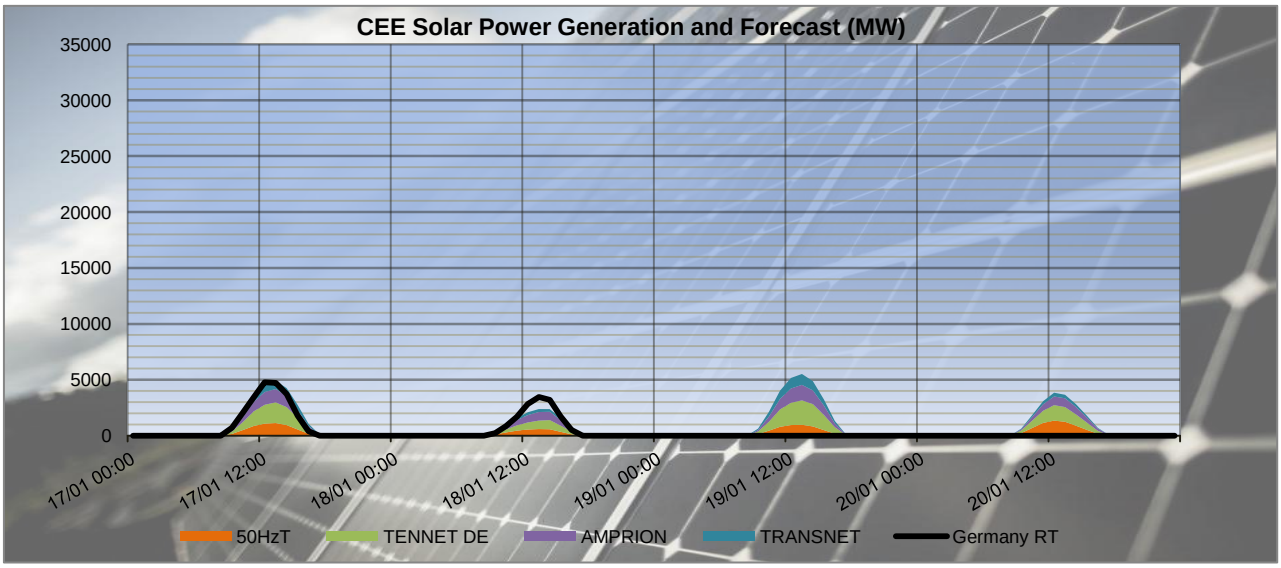
| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PST taps in DACF | **Zandvliet 1** | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| | **Zandvliet 2** | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| | **Van Eyck 1**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

| 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 |

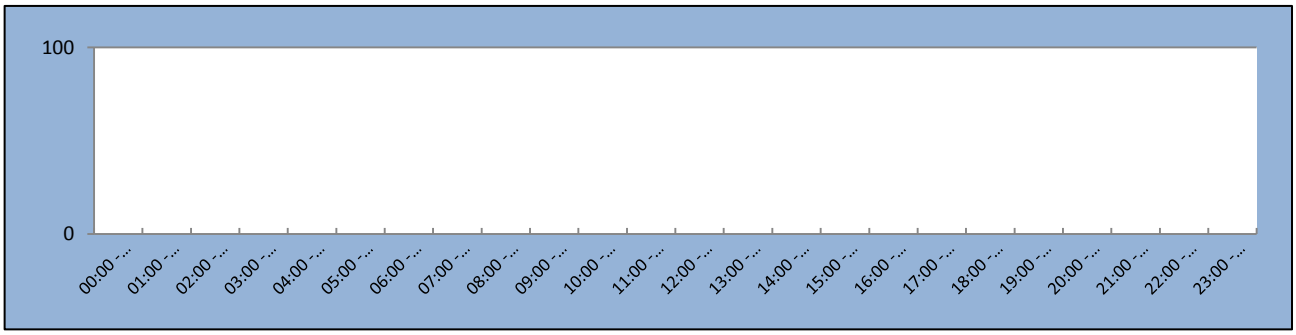
## CEE Renewable Power Generation & Forecast



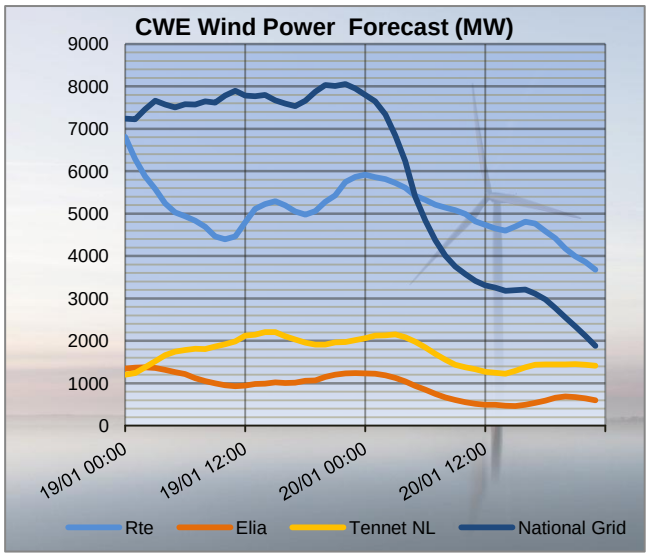



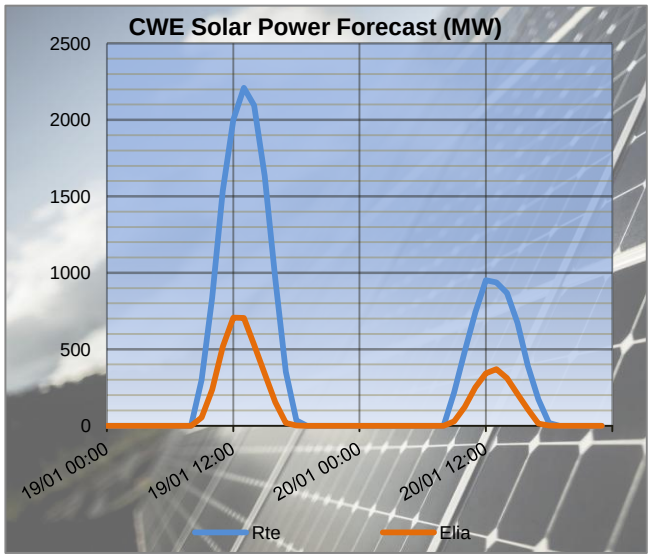

The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

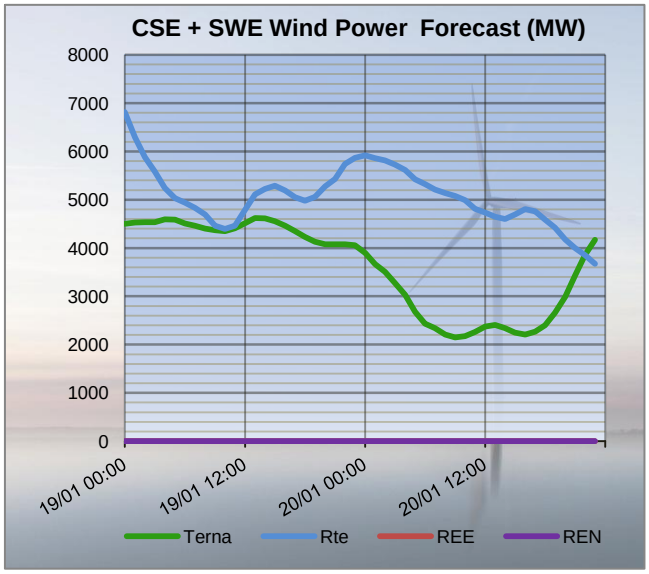
## 50HzT Preventive Redispatch

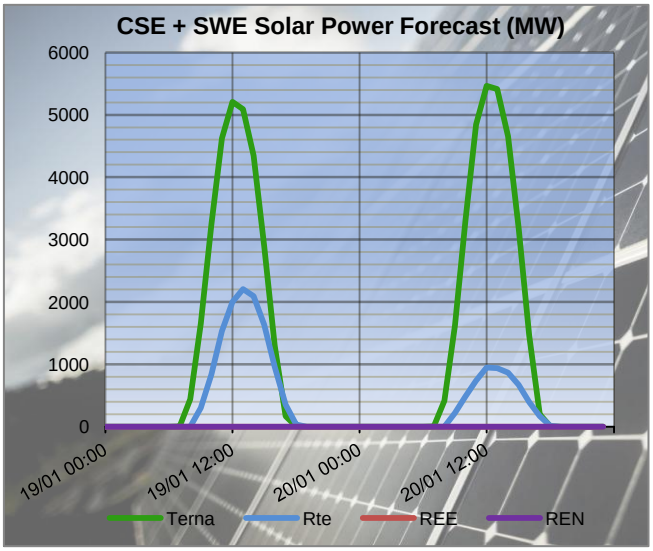


## CWE, CSE & SWE Renewable Power Forecast (D-1 and D-2)




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 | 622 | 417 | -205 | 164 | -47 | -211 | 133 | -61 | -194 | -12 | -165 | -153 |
| FR | BE | MONT ST MARTIN | AUBANGE | 229 | 197 | -32 | 67 | 45 | -22 | 69 | 44 | -25 | 44 | 9 | -35 |
| FR | BE | MOULAINE | AUBANGE | 232 | 202 | -30 | 77 | 57 | -20 | 81 | 57 | -24 | 57 | 23 | -34 |
| FR | BE | AVELIN | AVELGEM | 758 | 685 | -73 | 132 | 95 | -37 | 59 | -26 | -85 | -69 | -179 | -110 |
| FR | BE | MASTAING | AVELGEM | 475 | 406 | -69 | 228 | 197 | -31 | 206 | 143 | -63 | 119 | 37 | -82 |
| FR | BE | CHOOZ | MONCEAU | 0 | 217 | 217 | 0 | 172 | 172 | 0 | 171 | 171 | 0 | 132 | 132 |
| FR | DE | MUHLBACH | EICHSTETTEN | 461 | 538 | 77 | 230 | 178 | -52 | -6 | 40 | 46 | 7 | 105 | 98 |
| FR | DE | VOGELGRUN | EICHSTETTEN | 4 | 81 | 77 | 17 | 67 | 50 | -33 | 53 | 86 | -71 | 30 | 101 |
| FR | DE | ST AVOLD | ENSDORF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FR | DE | VIGY | ENSDORF 1 | 306 | 471 | 165 | 121 | 215 | 94 | -27 | 38 | 65 | -151 | -19 | 132 |
| FR | DE | VIGY | ENSDORF 2 | 311 | 501 | 190 | 32 | 144 | 112 | -134 | -51 | 83 | -272 | -114 | 158 |

| | | | | 17:30 | | | 19:30 | | | 23:30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Node 1 | Node 2 | DACF | Merge | Delta | DACF | Merge | Delta | DACF | Merge | Delta |
| FR | BE | LONNY | ACHENE | 248 | 123 | -125 | -384 | -443 | -59 | -222 | -417 | -195 |
| FR | BE | MONT ST MARTIN | AUBANGE | 31 | 58 | 27 | -59 | -90 | -31 | 0 | -98 | -98 |
| FR | BE | MOULAINE | AUBANGE | 40 | 66 | 26 | -48 | -78 | -30 | 12 | -82 | -94 |
| FR | BE | AVELIN | AVELGEM | 446 | 342 | -104 | -555 | -580 | -25 | -315 | -433 | -118 |
| FR | BE | MASTAING | AVELGEM | 372 | 284 | -88 | -130 | -149 | -19 | 33 | -54 | -87 |
| FR | BE | CHOOZ | MONCEAU | 0 | 201 | 201 | 0 | 86 | 86 | 0 | 116 | 116 |
| FR | DE | MUHLBACH | EICHSTETTEN | 374 | 353 | -21 | 41 | 21 | -20 | -144 | -8 | 136 |
| FR | DE | VOGELGRUN | EICHSTETTEN | 63 | 103 | 40 | -44 | 5 | 49 | -129 | -20 | 109 |
| FR | DE | ST AVOLD | ENSDORF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FR | DE | VIGY | ENSDORF 1 | 233 | 332 | 99 | -287 | -176 | 111 | -602 | -296 | **306** |
| FR | DE | VIGY | ENSDORF 2 | 192 | 303 | 111 | -426 | -300 | 126 | -751 | -412 | **339** |

| | | | | 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 | 453 | 382 | -71 | 142 | 106 | -36 | 73 | 90 | 17 | 164 | 126 | -38 |
| FR | CH | MAMBELIN | BASSECOURT | -51 | -5 | 46 | -181 | -180 | 1 | -228 | -207 | 21 | -198 | -175 | 23 |
| FR | CH | SIERENTZ | BASSECOURT | 443 | 438 | -5 | 332 | 355 | 23 | 323 | 330 | 7 | 388 | 387 | -1 |
| FR | CH | BOIS TOLLOT | ROMANEL | 265 | 166 | -99 | -1 | 46 | 47 | 22 | -28 | -50 | 107 | 132 | 25 |
| FR | CH | SIERENTZ | LAUFENBURG | 420 | 471 | 51 | 104 | 105 | 1 | -11 | -12 | -1 | 158 | 166 | 8 |
| FR | CH | CORNIER | RIDDES | 34 | 52 | 18 | -44 | 20 | 64 | -43 | -22 | 21 | -18 | 51 | 69 |
| FR | CH | CORNIER | ST TRIPHON | 31 | 41 | 10 | -37 | 3 | 40 | -40 | -34 | 6 | -5 | 28 | 33 |
| FR | CH | PRESSY | VALLORCINES | -58 | -45 | 13 | -156 | -74 | 82 | -163 | -165 | -2 | -151 | -28 | 123 |
| FR | CH | BOIS TOLLOT | VERBOIS | 220 | 250 | 30 | 227 | 249 | 22 | 245 | 264 | 19 | 270 | 300 | 30 |
| FR | CH | GENISSIAT | VERBOIS | 184 | 177 | -7 | 140 | 155 | 15 | 158 | 153 | -5 | 182 | 198 | 16 |
| FR | CH | GENISSIAT | VERBOIS | 184 | 177 | -7 | 140 | 155 | 15 | 158 | 153 | -5 | 182 | 198 | 16 |
| FR | IT | ALBERTVILLE | RONDISSONE | 832 | 793 | -39 | 783 | 726 | -57 | 776 | 763 | -13 | 817 | 608 | -209 |
| FR | IT | ALBERTVILLE | RONDISSONE | 902 | 749 | -153 | 872 | 750 | -122 | 861 | 807 | -54 | 899 | 504 | **-395** |
| FR | IT | MENTON | CAMPOROSSO | 248 | 194 | -54 | 155 | 192 | 37 | 154 | 197 | 43 | 160 | 198 | 38 |
| FR | IT | VILLARODIN | VENAUS | 519 | 650 | 131 | 723 | 823 | 100 | 679 | 854 | 175 | 678 | 1013 | **335** |

| | | | | 17:30 | | | 19:30 | | | 23:30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Node 1 | Node 2 | DACF | Merge | Delta | DACF | Merge | Delta | DACF | Merge | Delta |
| FR | CH | SIERENTZ | ASPHARD | 259 | 241 | -18 | 138 | 139 | 1 | 181 | 111 | -70 |
| FR | CH | MAMBELIN | BASSECOURT | -89 | -78 | 11 | -249 | -258 | -9 | -343 | -303 | 40 |
| FR | CH | SIERENTZ | BASSECOURT | 305 | 319 | 14 | 410 | 404 | -6 | 502 | 492 | -10 |
| FR | CH | BOIS TOLLOT | ROMANEL | 59 | 46 | -13 | -77 | -8 | 69 | 14 | -15 | -29 |
| FR | CH | SIERENTZ | LAUFENBURG | 107 | 87 | -20 | 64 | 26 | -38 | 231 | 223 | -8 |
| FR | CH | CORNIER | RIDDES | -28 | 15 | 43 | -77 | -22 | 55 | -80 | -26 | 54 |
| FR | CH | CORNIER | ST TRIPHON | -27 | -8 | 19 | -55 | -41 | 14 | -111 | -72 | 39 |
| FR | CH | PRESSY | VALLORCINES | -169 | -146 | 23 | -211 | -114 | 97 | -226 | -168 | 58 |
| FR | CH | BOIS TOLLOT | VERBOIS | 244 | 263 | 19 | 293 | 258 | -35 | 164 | 215 | 51 |
| FR | CH | GENISSIAT | VERBOIS | 169 | 170 | 1 | 185 | 171 | -14 | 111 | 127 | 16 |
| FR | CH | GENISSIAT | VERBOIS | 169 | 170 | 1 | 185 | 171 | -14 | 112 | 127 | 15 |
| FR | IT | ALBERTVILLE | RONDISSONE | 888 | 837 | -51 | 760 | 686 | -74 | 692 | 472 | -220 |
| FR | IT | ALBERTVILLE | RONDISSONE | 969 | 843 | -126 | 850 | 714 | -136 | 738 | 314 | **-424** |
| FR | IT | MENTON | CAMPOROSSO | 143 | 208 | 65 | 153 | 193 | 40 | 146 | 194 | 48 |
| FR | IT | VILLARODIN | VENAUS | 723 | 903 | 180 | 603 | 796 | 193 | 353 | 617 | **264** |

## 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 | 38 | 2448 | 33 |
| | Doel - Mercator (51) | 2239 | 36 | 2239 | 45 |
| | Doel - Mercator (52) | 2239 | 36 | 2239 | 45 |
| | Doel - Mercator (54) | 2448 | 36 | 2448 | 45 |
| | Doel - Zandvliet (25) | 2349 | 14 | 2349 | 33 |
| | Mercator - Horta (73) | 2569 | 23 | 2569 | 37 |
| | Courcelles - Gramme (31) | 2349 | 42 | 2349 | 37 |
| | Mercator - Rodenhuize/Horta (74) | 2349 | 25 | 2349 | 40 |
| RTE | Attaques - Warande 2 | 3780 | 55 | 3780 | 57 |
| | Avelin - Gavrelle | 2622 | 25 | 2622 | 45 |
| | Avelin - Warande | 3458 | 16 | 3458 | 10 |
| | Lonny - Seuil | 4149 | 20 | 4149 | 25 |
| | Mandarins - Warande 1 | 3780 | 52 | 3780 | 54 |
| | Muhlbach - Scheer | 2598 | 11 | 2598 | 17 |
| | Revigny - Vigy | 2596 | 33 | 2596 | 38 |
| | Warande - Weppes | 3458 | 22 | 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 | 24 | 2520 | 21 |
| | | Hagenwerder - Mikulowa (567) | 2520 | 21 | 2520 | 19 |
| | | Hagenwerder - Mikulowa (568) | 2520 | 21 | 2520 | 19 |
| | | Remptendorf - Redwitz (413) | 3507 | 36 | 3551 | 46 |
| | | Remptendorf - Redwitz (414) | 3507 | 36 | 3551 | 46 |
| | | Röhrsdorf - Hradec (445) | 2520 | 0 | 2520 | 32 |
| | | Röhrsdorf - Hradec (446) | 2520 | 37 | 2520 | 32 |
| | | Vieselbach - Mecklar (449-1) | 2520 | 26 | 2520 | 23 |
| | | Wolmirstedt - Helmstedt (491-1) | 2400 | 12 | 2400 | 4 |
| | | Wolmirstedt - Helmstedt (492-2) | 2400 | 12 | 2400 | 4 |
| | 220 kV | Vierraden - Krajnik (507) | 1370 | 0 | 1361 | 0 |
| | | Vierraden - Krajnik (508) | 1370 | 0 | 1361 | 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 | |
| | | | | | | | | | | | |
| | | **No critical constraints 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 | |
| Tennet DE / Amprion | 18:00 - 21:00 & 22:00 - 23:00 | 400 | T-line Diele - Niederlangen - Meppen | | N-K | 119% | 400 | Dörpen West | Hanekenfahr | | 19:30 |
| | | **Preventive Actions:** Decrease 5 taps on Diele PSTs (33 -> 28), increase 1 tap on Meeden PSTs (17 -> 18) and implement 2-nodes topology at Dörpen West substation => **96% 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 | |
| 150 | Andum | Busbar | 1 | 108% | 150 | Brustem | Landen | | 07:00 - 12:00 & 15:00 - 19:00 |
| 380 | Massenhoven | Busbar | 1 | 109% | 150 | Lillo | Zandvliet | | 07:00 - 21:00 & 22:00 - 24:00 |
| **Observability area** | | | | | | | | | |

## 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): **16:30**

Adaptations made on merged DACFs:

**Off-peak:**

- SI ➔ IT physical flow adapted to the target flow : **1100 MW (agreed by ELES and APG)**
- Mendrisio-Cagno flow adapted to the schedule : **191 MW**
- PST of Lienz adapted to **150 MW**
- PST of Camporosso adapted to **200 MW**
- PSTs of Rondisonne adapted to **tap 33**

**Peak:**

- SI ➔ IT physical flow adapted to the target flow : **1200 MW (agreed by ELES and APG)**
- Mendrisio-Cagno flow adapted to the schedule : **50 MW**
- PST of Lienz adapted to **150 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 | 37 | 2370 | 38 |
| | | Albertville - Rondissone 2 | 2370 | 38 | 2370 | 39 |
| | | Bulciago - Soazza | 2300 | 7 | 2300 | 6 |
| | | Cagno - Mendrisio | 855 | 30 | 855 | 38 |
| | | Musignano - Lavorgo | 2270 | 62 | 2270 | 63 |
| | | Redipuglia - Divaca | 2700 | 54 | 2700 | 47 |
| | | Robbia - San Fiorano | 2530 | 60 | 2530 | 62 |
| | | Robbia - Gorlago | 2530 | 66 | 2530 | 68 |
| | | Venaus - Villarodin | 2715 | 21 | 2715 | 22 |
| | 220 kV | Airolo - Ponte | 900 | 0 | 900 | 0 |
| | | Lienz - Soverzene | 750 | 47 | 750 | 43 |
| | | Menton - Campo Rosso | 1165 | 44 | 1165 | 34 |
| | | Padriciano - Divaca | 960 | 50 | 960 | 49 |
| | | Riddes - Avise | 1010 | 17 | 1010 | 18 |
| | | Riddes - Valpelline | 1010 | 20 | 1010 | 22 |
| | | Serra - Pallanzeno | 900 | 0 | 900 | 0 |

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 | 1862 | 3735 | 101 | 1046 |
| | Compensation ratio (calculated from NTC) | 39% | 49% | 4% | 8% |
| | Pentalateral impact on physical flows | -29% | -52% | -4% | -15% |
| Peak | Initial physical flows on adapted base case | 2856 | 2741 | 119 | 1095 |
| | Compensation ratio (calculated from NTC) | 45% | 40% | 5% | 11% |
| | Pentalateral impact on physical flows | -28% | -52% | -4% | -16% |

## *OFF PEAK*

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

<table>
<tr><th rowspan="2"></th><th rowspan="2">TSO</th><th colspan="4">Contingency</th><th colspan="5">Constraint</th></tr>
<tr><th>U (kV)</th><th>Substation 1</th><th>Substation 2</th><th>Code</th><th>Overload</th><th>U (kV)</th><th>Substation 1</th><th>Substation 2</th><th>Code</th></tr>
<tr><td rowspan="5">Off Peak</td><td rowspan="3">Terna / ELES / APG / SWG</td><td rowspan="3">380</td><td colspan="2" rowspan="3">Sils - Filisur<br>Robbia - Pradella - Sils</td><td rowspan="3">N-K</td><td>109%</td><td>380</td><td>Lavorgo</td><td>Musignano</td><td></td></tr>
<tr><td>124%</td><td>220</td><td>Peccia</td><td>Handeck</td><td></td></tr>
<tr><td>119%</td><td>220</td><td>Soverzene</td><td>Lienz</td><td></td></tr>
<tr><td colspan="10"><u>Preventive action:</u><br>Target flow SL > IT set to 1100 MW in base case (1200 MW was accepted by Eles and APG, however constraints appear on Divaca transformer)<br>Max tap positions on the Rondissone PST's<br>Increase 4 taps on the Lavorgo PST (-8 > -4)<br><br>103% remaining on Lavorgo - Musignano<br>117% remaining on Peccia - Handeck<br>106% remaining on Lienz - Soverzene<br><br>300 MW of pentalateral reduction needed to solve the constraint on Lavorgo - Musignano<br><br>97% remaining on Lavorgo - Musignano<br>113% remaining on Peccia - Handeck<br>100% remaining on Lienz - Soverzene<br><br>Constraint on Peccia - Handeck can be managed by internal redispatching. However SWG can request to increase the amount of pentalateral upto 1000 MW to solve these constraints.<br><br><u>Curative action:</u> Decrease 1 tap on the Lienz PST<br><br>94% remaining on Lienz - Soverzene</td></tr>
<tr><td colspan="10">With above mentioned PRA following constraints are detected:</td></tr>
<tr><td rowspan="2">Terna / Eles / APG</td><td>400</td><td>ATD</td><td>Redipuglia - Divaca</td><td>N-K</td><td>108%</td><td>220</td><td>Lienz</td><td>Soverzene</td><td></td></tr>
<tr><td colspan="10"><u>Curative action:</u> Decrease 2 taps on Lienz PST => 95% remaining</td></tr>
</table>

## *PEAK*

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

<table>
<tr><th rowspan="2"></th><th rowspan="2">TSO</th><th colspan="4">Contingency</th><th colspan="5">Constraint</th></tr>
<tr><th>U (kV)</th><th>Substation 1</th><th>Substation 2</th><th>Code</th><th>Overload</th><th>U (kV)</th><th>Substation 1</th><th>Substation 2</th><th>Code</th></tr>
<tr><td rowspan="4">Peak</td><td rowspan="2">Terna / Eles / APG</td><td>400</td><td>ATD</td><td>Redipuglia - Divaca</td><td>N-K</td><td>111%</td><td>220</td><td>Lienz</td><td>Soverzene</td><td></td></tr>
<tr><td colspan="10"><u>Curative action:</u> Decrease 2 taps on Lienz PST => 98% remaining</td></tr>
<tr><td rowspan="2">Rte / Terna</td><td>380</td><td>Albertville</td><td>Rondissone</td><td>N-2</td><td>114%</td><td>380</td><td>La Praz</td><td>PST</td><td></td></tr>
<tr><td colspan="10"><u>Curative action:</u> Automatic device moves PST back in neutral tap => 93% remaining</td></tr>
</table>

***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 | 411 |
| Rondissone 1 (1/33) | 33 | 626 |
| Rondissone 2 (1/33) | 33 | 607 |
| Camporosso (-32/32) | -17 | 160 |
| Lienz (-32/32) | -12 | 133 |
| Padriciano (1/33) | 22 | 187 |
| Divaca (-32/32 each) | -6 | 888 |

| PST | Peak | |
|---|---|---|
| | Tap position | Physical flow to Italy (MW) |
| La Praz (1/33) | 1 | 817 |
| Rondissone 1 (1/33) | 27 | 860 |
| Rondissone 2 (1/33) | 32 | 856 |
| Camporosso (-32/32) | 0 | 194 |
| Lienz (-32/32) | -13 | 120 |
| Padriciano (1/33) | 14 | 191 |
| Divaca (-32/32 each) | 6 | 907 |

## Conclusion

CWE: No critical constraints detected.

CEE: No critical constraints detected.

CSE: Situation is tense due to the ongoing forced outage of Sils-Soazza. To manage constraints on 380 kV grid on IT - CH border, a pentalateral reduction of 300 MW is needed. (To manage overloads on the Swiss 220 kV grid after this incident, an increase of this amount up to 1000 MW might be requested).