

**ALL TSOS' SCENARIO DEFINITION AND SCENARIO
DESCRIPTION FOR THE YEAR 2023 CGM
CREATION (IN ACCORDANCE WITH ARTICLE 65
OF THE COMMISSION REGULATION (EU)
2017/1485 OF 2 AUGUST 2017 ESTABLISHING A
GUIDELINE ON ELECTRICITY TRANSMISSION
SYSTEM OPERATION**

Final | 15 July 2022



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All TSOs, taking into account the following,

WHEREAS

- (1) This document is a scenario definition for year 2023 and scenario description of All Transmission System Operators (hereafter referred to as “TSOs”).
- (2) Article 65 of Commission Regulation (EU) 2017/1485 constitute the legal basis for the scenario description.

Common list of 2023 year scenarios

All TSO's agreed on the following reference timestamp to create scenarios for 2023:

- Winter Peak I, based on the 3rd Wednesday of January year 2021, 20.01.2021 10:30 CET;
- Spring Peak, based on the 3rd Wednesday of April year 2021, 21.04.2021 10:30 CET;
- Summer Peak, based on the 3rd Wednesday of July year 2021, 21.07.2021 10:30 CET;
- Summer Low Demand, based on the 3rd Wednesday of July year 2021, 21.07.2021 03:30 CET;
- Autumn Peak, based on the 3rd Wednesday of October year 2021, 20.10.2021 10:30 CET;
- Winter Peak II, based on the 3rd Wednesday of January year 2022, 19.01.2022 10:30 CET.

The detailed description of scenarios is shown in the following paragraphs. All elements which are foreseen to be in operation in any time of the scenario period are included in the scenarios.

Winter I peak scenario

The Winter peak scenario has been agreed by TSOs to meet the requirements for a year ahead model under SOGL and FCA guidance notes. It covers the period from 1st December 2022 to 28th February 2023. The reference timestamp to represent this scenario is the third Wednesday in January 2021 at 10:30hrs (20th January 2021). It is the most probable representation of the Winter peak scenario.

TSOs have agreed this scenario will be based on an estimated demand and generation profile which is likely to be equivalent to a seasonal peak-load.

The generation pattern of renewable and conventional sources and the amount of power generated and consumed by facilities connected to the distribution grid will be modelled following the situation of the reference timestamp or using estimated information, ensuring the agreed net positions are matched. In general, the generation pattern will represent a fully available production park.

The net positions have been agreed between all TSOs. The scenario outline tables for each synchronous area can be found in Appendix 1.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st December 2022 to 28th February 2023. The changes identified are at: substation, branch, generation or other significant plant level and are likely to influence system loading or cross border

flows. These changes are listed in the scenario outline tables for each main plant or network item in Appendix 2.

Any major system outage(s), with a duration for the entire scenario period, will be included in this scenario model.

The real-life security limits of elements can vary around given thresholds in this scenario, depending on e.g.:

- load;
- temperature;
- infeed pattern;
- outage pattern;
- etc.

Spring peak scenario

The Spring peak scenario has been agreed by TSOs to meet the requirements for a year ahead model under SOGL and FCA guidance notes. It covers the period from 1st March 2023 to 31st May 2023. The reference timestamp to represent this scenario is the third Wednesday in April 2021 at 10:30hrs (21th April 2021). It is the most probable representation of the Spring peak scenario.

TSOs have agreed this scenario will be based on an estimated demand and generation profile which is likely to be equivalent to a seasonal peak-load.

The generation pattern of renewable and conventional sources and the amount of power generated and consumed by facilities connected to the distribution grid will be modelled following the situation of the reference timestamp or using estimated information, ensuring the agreed net positions are matched. In general, the generation pattern will represent a fully available production park.

The net positions have been agreed between all TSOs. The scenario outline tables for each synchronous area can be found in Appendix 3.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st March 2023 to 31st May 2023. The changes identified are at: substation, branch, generation or other significant plant level and are likely to influence system loading or cross border flows. These changes are listed in the scenario outline Tables for each main plant or network item in Appendix 4.

Any major system outage(s), with a duration for the entire scenario period, will be included in this scenario model.

The real-life security limits of elements can vary around given thresholds in this scenario, depending on e.g.:

- load;
- temperature;
- infeed pattern;
- outage pattern;
- etc.

Summer peak scenario

The Summer peak scenario has been agreed by TSOs to meet the requirements for a year ahead model under SOGL and FCA guidance notes. It covers the period from 1st June 2023 to 31st August 2023. The reference timestamp to represent this scenario is the third Wednesday in July 2021 at 10:30hrs (21th July 2021). It is the most probable representation of the Summer peak scenario.

TSOs have agreed this scenario will be based on an estimated demand and generation profile which is likely to be equivalent to a seasonal peak-load.

The generation pattern of renewable and conventional sources and the amount of power generated and consumed by facilities connected to the distribution grid will be modelled following the situation of the reference timestamp or using estimated information, ensuring the agreed net positions are matched. In general, the generation pattern will represent a fully available production park.

The net positions have been agreed between all TSOs. The scenario outline Tables for each synchronous area can be found in Appendix 5.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st June 2023 to 31st August 2023. The changes identified are at: substation, branch, generation or other significant plant level and are likely to influence system loading or cross border flows. These changes are listed in the scenario outline Tables for each main plant or network item in Appendix 6.

Any major system outage(s), with a duration for the entire scenario period, will be included in this scenario model.

The real-life security limits of elements can vary around given thresholds in this scenario, depending on e.g.:

- load;
- temperature;
- infeed pattern;
- outage pattern;
- etc.

Summer low demand scenario

The Summer peak scenario has been agreed by TSOs to meet the requirements for a year ahead model under SOGL and FCA guidance notes. It covers the period from 1st June 2023 to 31st August 2023. The reference timestamp to represent this scenario is the third Wednesday in July 2021 at 03:30hrs (21th July 2021). It is the most probable representation of the Summer low demand scenario.

TSOs have agreed this scenario will be based on an estimated demand and generation profile which is likely to be equivalent to a seasonal low-load.

The generation pattern of renewable and conventional sources and the amount of power generated and consumed by facilities connected to the distribution grid will be modelled following the situation of the reference timestamp or using estimated information, ensuring the agreed net positions are matched. In general, the generation pattern will represent a fully available production park.

The net positions have been agreed between all TSOs. The scenario outline Tables for each synchronous area can be found in Appendix 7.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st June 2023 to 31st August 2023. The changes identified are at: substation, branch, generation or other significant plant level and are likely to influence system loading or cross border flows. These changes are listed in the scenario outline Tables for each main plant or network item in Appendix 6.

Any major system outage(s), with a duration for the entire scenario period, will be included in this scenario model.

The real-life security limits of elements can vary around given thresholds in this scenario, depending on e.g.:

- load;
- temperature;
- infeed pattern;
- outage pattern;
- etc.

Autumn peak scenario

The Autumn peak scenario has been agreed by TSOs to meet the requirements for a year ahead model under SOGL and FCA guidance notes. It covers the period from 1st September 2023 to 30th November 2023. The reference timestamp to represent this scenario is the third Wednesday in October 2021 at 10:30hrs (20th October 2021). It is the most probable representation of the Autumn peak scenario.

TSOs have agreed this scenario will be based on an estimated demand and generation profile which is likely to be equivalent to a seasonal peak-load.

The generation pattern of renewable and conventional sources and the amount of power generated and consumed by facilities connected to the distribution grid will be modelled following the situation of the reference timestamp or using estimated information, ensuring the agreed net positions are matched. In general, the generation pattern will represent a fully available production park.

The net positions have been agreed between all TSOs. The scenario outline Tables for each synchronous area can be found in Appendix 8.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st September 2023 to 30th November 2023. The changes identified are at: substation, branch, generation or other significant plant level and are likely to influence system loading or cross border flows. These changes are listed in the scenario outline Tables for each main plant or network item in Appendix 9.

Any major system outage(s), with a duration for the entire scenario period, will be included in this scenario model.

The real-life security limits of elements can vary around given thresholds in this scenario, depending on e. g.:

- load;
- temperature;
- infeed pattern;
- outage pattern;
- etc.

Winter peak II scenario

The Winter peak scenario has been agreed by TSOs to meet the requirements for a year ahead model under SOGL and FCA guidance notes. It covers the period from 1st December 2023 to 29th February 2024. The reference timestamp to represent this scenario is the third Wednesday in January 2022 at 10:30hrs (19th January 2022). It is the most probable representation of the Winter peak scenario.

TSOs have agreed this scenario will be based on an estimated demand and generation profile which is likely to be equivalent to a seasonal peak-load.

The generation pattern of renewable and conventional sources and the amount of power generated and consumed by facilities connected to the distribution grid will be modelled following the situation of the reference timestamp or using estimated information, ensuring the agreed net positions are matched. In general, the generation pattern will represent a fully available production park.

The net positions have been agreed between all TSOs. The scenario outline Tables for each synchronous area can be found in Appendix 10.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st December 2023 to 29th February 2024. The changes identified are at: substation, branch, generation or other significant plant level and are likely to influence system loading or cross border flows. These changes are listed in the scenario outline Tables for each main plant or network item in Appendix 11.

Any major system outage(s), with a duration for the entire scenario period, will be included in this scenario model.

The real-life security limits of elements can vary around given thresholds in this scenario, depending on e.g.:

- load;
- temperature;
- infeed pattern;
- outage pattern;
- etc.

Language

The reference language for this common list of year-ahead scenarios shall be English.

Appendix 1: Agreed forecast AC and DC exchanges for the Winter peak I scenario

Area Net Position

	Net Position (MW)
AL	-284
AT	-3400
BA	1213
BE	-928
BG	1701
CZ	1623
DE-50HERTZ	8406
DE-AMPRION	-1642
DE-TENNET_DE	7000
DE-TRANSNETBW	-3577
DK1	969
DK2	-662
EE	199
ES	405
FI	-1581
FR	-6900
GR	-400
HR	-540

HU	-1900
CH	116
IT	-5860
LT	-216
LU	-668
LV	132
ME	174
MK	-300
NL	591
NO	3512
PL	400
PT	86
RO	-400
RS	-667
SE	2998
SEM	62
SI	-7
SK	-146
TR	150
UA	148
KS	-370

Note: that sign of the Net Position is as follow: - import / + export

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)	Including losses [MW]
DE-50HERTZ>DK2	-600	-594
SE>DE-TENNET_DE	283	280
DK1>NL	479	474
NL>GB	1062	1051
GR>IT	300	297
GB>SEM	-39	-39
LT>PL	350	347
SE>LT	-40	-39
SEM>GB	23	22
NO>NL	671	664
PL>SE	-300	-297
DK1>DK2	377	373
DK1>NO	-1255	-1243
EE>FI	-276	-273
SE>FI	797	789
DK1>SE	-594	-588
BE>DE	0	0
BE>GB	-39	-38
FR>GB	-1651	-1640
DE-TENNET_DE>NO	-704	-702

NO>GB	0	0
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Appendix 2: System changes for the Winter peak I scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
Swissgrid	Creux de Chippis	SCHIPP1	380	Commissioning
TenneT NL	Wijk aan Zee	NWAZ381	380	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	Westeende	Kruckel	Garenfeld	380	Commissioning
Amprion	Ostende	Kruckel	Garenfeld	380	Commissioning
Amprion	Herdecke Nord	Eiberg	Garenfeld	220	Decommissioning
Amprion	Herdecke Süd	Eiberg	Garenfeld	220	Decommissioning
PSE	6007	Dunowo	Żydowo-Kierzkowo	220	Commissioning
PSE	6301	Żydowo	Zydowo-Kierzkowo	220	Decommissioning
PSE	218	Piła Krzewina	Żydowo	220	Decommissioning
PSE	6601	Dunowo	Żydowo	220	Decommissioning
PSE	219	Piła Krzewina	Zydowo-Kierzkowo	220	Commissioning
Swissgrid	Chamoson - Creux de Chippis 1	Chamoson	Creux de Chippis	380	Commissioning



TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Swissgrid	Chamoson - Creux de Chippis 2	Chamoson	Creux de Chippis	380	Commissioning
TenneT NL	Beverwijk - Wijk aan Zee 380	Beverwijk	Wijk aan Zee	380	Commissioning
TenneT NL	Krimpen a/d IJssel - Diemen 380	Krimpen a/d IJssel	Diemen	380	Commissioning
TenneT NL	Diemen - Oostzaan 380	Diemen	Oostzaan	380	Commissioning
TenneT NL	Krimpen a/d IJssel - Oostzaan 380	Krimpen a/d IJssel	Oostzaan	380	Decommissioning

Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning / Decommissioning
XGA_WE11	TTG	D2GANK11	380	Commissioning
XGA_WE11	Amprion	D7HUEL1A	380	Commissioning
XGA_WE12	TTG	D2GANK12	380	Commissioning
XGA_WE12	Amprion	D7HUEL1B	380	Commissioning
XRZ_CH11	PSE	ZRZE	400	Commissioning
XRZ_CH11	Ukrenerg	UCH	400	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
Amprion	TR 211	Opladen	Opladen	220/110	Decommissioning
Amprion	TR 413	Garenfeld	Garenfeld	380/110	Commissioning
Amprion	TR 414	Garenfeld	Garenfeld	380/110	Commissioning
Amprion	TR 415	Garenfeld	Garenfeld	380/110	Commissioning
Amprion	TR 201	Garenfeld	Garenfeld	220/110	Decommissioning
Amprion	TR 202	Garenfeld	Garenfeld	220/110	Decommissioning
MAVIR	Perkáta Tr. III.	Perkáta	Perkáta	400/132	Commissioning
Swissgrid	Creux de Chippis Trafo TA01	Creux de Chippis	Creux de Chippis	380/220	Commissioning
TenneT DE	TTG/380-110/Frankfurt SW/T411	D2FRSW1*	D2FRSW5*	380/110	Decommissioning
TenneT DE	TTG/380-380/Wuergau/T441A	D2WG 1*	D2WG 1*	380/380	Commissioning
TenneT DE	TTG/380-380/Wuergau/T441B	D2WG 1*	D2WG 1*	380/380	Commissioning
TenneT DE	TTG/380-380/Wuergau/T442A	D2WG 1*	D2WG 1*	380/380	Commissioning
TenneT DE	TTG/380-380/Wuergau/T442B	D2WG 1*	D2WG 1*	380/380	Commissioning
Terna	Bisaccia PST	Bisaccia	Bisaccia	380	Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning / Decommissioning
Elia	Tihange 2	Gramme	380kV	Nuclear	Decommissioning
PSE	Zakłady Azotowe gen.3	Puławy	220	Thermal (coal)	Decommissioning
PSE	Zakłady Azotowe gen.4	Puławy	220	Thermal (coal)	Decommissioning
PSE	Zakłady Azotowe gen.5	Puławy	220	Thermal (coal)	Commissioning
PSE	Rybnik gen.3	Wielopole	110	Thermal (coal)	Decommissioning
PSE	Rybnik gen.4	Wielopole	220	Thermal (coal)	Decommissioning
TenneT DE	DoIWin6	Emden/Ost	380	Offshore Wind	Commissioning
TenneT DE	Irsching6	Irsching	380	Thermal (gas)	Commissioning
TransnetBW	Neckarwestheim 2	Neckarwestheim	380	Nuclear	Decommissioning

Appendix 3: Agreed forecast AC and DC exchanges for the Spring peak scenario

Area Net Position

	Net Position (MW)
AL	170
AT	-2600
BA	585
BE	107
BG	1133
CZ	950
DE-50HERTZ	5693
DE-AMPRION	-2400
DE-TENNET_DE	1677
DE-TRANSNETBW	-1600
DK1	1376
DK2	-612
EE	771
ES	405
FI	-1198
FR	-1900
GR	-1050
HR	-683

	Net Position (MW)
HU	-1533
CH	245
IT	-4960
LT	-848
LU	-510
LV	154
ME	-74
MK	-250
NL	480
NO	2744
PL	600
PT	86
RO	-400
RS	247
SE	2031
SEM	62.2
SI	317
SK	-16
TR	150
UA	151
KS	-67

Note: that sign of the Net Position is as follow: - import / + export

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)	Including losses [MW]
DE-50HERTZ>DK2	-178	-177
SE>DE-TENNET_DE	146	144
DK1>NL	380	376
NL>GB	354	350
GR>IT	300	297
GB>SEM	-40	-39
LT>PL	265	262
SE>LT	-118	-117
SEM>GB	23	22
NO>NL	372	368
PL>SE	-205	-203
DK1>DK2	600	594
DK1>NO	-952	-942
EE>FI	-306	-303
SE>FI	-100	-99
DK1>SE	-632	-625
BE>DE	0	0
BE>GB	132	131
FR>GB	-1113	-1106
DE-TENNET_DE>NO	-893	-890
NO>GB	0	0

Appendix 4: System changes for the Spring peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
KOSTT	Kastrioti	_Ferz35	110	Commissioning
LITGRID	Tytuvėnai	-	330	Commissioning
LITGRID	Antkalniškiai	-	110	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	Weingarten	Bürstadt	Maximiliansau	220	Decommissioning
PSE	E207	Ostrołęka	Stanisławów	400	Commissioning
TenneT DE	TTG/380/ Borken-Waldeck- Twistetal/2	D2BORK1*	D2TWIS1*	380	Decommissioning
TransnetBW	Eichstetten - Kühmoos green (Dreisam)	Eichstetten	Kühmoos	380	Decommissioning
TransnetBW	Asphard - Kühmoos red (Wehra)	Asphard (CH)	Kühmoos	380	Decommissioning
TransnetBW	Asphard - Eichstetten	Asphard (CH)	Eichstetten	380	Commissioning

Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning / Decommissioning
XAS_EI11	Swissgrid	SASPHA11	380	Commissioning
XAS_EI11	TransnetBW	SASPHA11	380	Commissioning
XAS_KU11	Swissgrid	SASPHA11	380	Decommissioning
XAS_KU11	TransnetBW	Kühmoos	380	Decommissioning
XVK_IS11	Transelectrica	RISAC41	400	Commissioning
XVK_IS11	Moldelectrica	U7VULC11	400	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	TR 412	Meppen	Meppen	380/110	Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning / Decommissioning
LITGRID	Tytuvėnai WPP	Tytuvėnai	330	Wind	Commissioning
LITGRID	Antkalniškiai WPP	Antkalniškiai	110	Wind	Commissioning
Terna	SCS Suvereto	Suvereto	380kV	Synchronous Condenser	Commissioning
Terna	SCS Rosara	Rosara	380kV	Synchronous Condenser	Commissioning
Terna	STATCOM Aurelia	Aurelia	380kV	STATCOM	Commissioning
Terna	STATCOM Montalto	Montalto	380kV	STATCOM	Commissioning

Appendix 5: Agreed forecast AC and DC exchanges for the Summer peak scenario

Area Net Position

	Net Position (MW)
AL	-321
AT	-986
BA	319
BE	488
BG	728
CZ	791
DE-50HERTZ	4846
DE-AMPRION	-3206
DE-TENNET_DE	1859
DE-TRANSNETBW	-2601
DK1	-998
DK2	-881
EE	849
ES	-34
FI	-1793
FR	5221
GR	-188
HR	-1082

HU	-1505
CH	1981
IT	-6246
LT	-1053
LU	-486
LV	201
ME	-50
MK	-151
NL	268
NO	2911
PL	-120
PT	-7
RO	-807
RS	-155
SE	2731
SEM	-11
SI	-95
SK	25
TR	-590
UA	99
KS	149

Note: that sign of the Net Position is as follow: - import / + export

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)	Including losses [MW]
DE-50HERTZ>DK2	299	296
SE>DE-TENNET_DE	272	269
DK1>NL	-551	-545
NL>GB	-136	-134
GR>IT	350	347
GB>SEM	7	7
LT>PL	267	265
SE>LT	159	158
SEM>GB	-4	-4
NO>NL	616	610
PL>SE	-203	-201
DK1>DK2	587	581
DK1>NO	-1380	-1366
EE>FI	-111	-109
SE>FI	1200	1188
DK1>SE	-719	-712
BE>DE	0	0
BE>GB	44	43
FR>GB	204	203
DE-TENNET_DE>NO	-395	-394
NO>GB	0	0

Appendix 6: System changes for the Summer peak and low demand scenarios

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
MAVIR	Mezőcsát	MMECS	220	Commissioning
PSE	Chełm	ZCHS	400	Commissioning
TransnetBW	Birkenfeld	D4BIRK	380	Commissioning
Terna	Magenta	IMAGM111	380	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	Dümmersee Süd 1	St. Hülfe	Pkt. Lemförde	380	Decommissioning
Amprion	Ochsenmoor West	St. Hülfe	Wehrendorf	380	Commissioning
Amprion	Ochsenmoor Ost	St. Hülfe	Wehrendorf	380	Commissioning
Amprion	Westerholt West	Kusenhorst	Emscherbruch	380	Commissioning
Amprion	Brauweiler Ost	Rommerskirchen	Brauweiler	380	Commissioning
Amprion	Weinstraße Ost	Lamsheim	Maximiliansau	380	Commissioning
Elering	Tartu-Balti	Tartu	Balti	330	Commissioning
MAVIR	Sajószöged-Szolnok	Sajószöged	Szolnok	220	Decommissioning
MAVIR	Szolnok-Mezőcsát	Szolnok	Mezőcsát	220	Commissioning
MAVIR	Mezőcsát-Sajószöged	Mezőcsát	Sajószöged	220	Commissioning



TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
PSE	F004	Chełm	Lublin Systemowa	400	Commissioning
Swissgrid	Batiaz-Chamoson	Batiaz	Chamoson	380	Commissioning
Swissgrid	Batiaz-Romanel	Batiaz	Romanel	380	Commissioning
Swissgrid	Batiaz-Y/Batiaz	Batiaz	Y/Batiaz	380	Decommissioning
Swissgrid	Y/Batiaz-Chamoson	Y/Batiaz	Chamoson	380	Decommissioning
Swissgrid	Y/Batiaz-Romanel	Y/Batiaz	Romanel	380	Decommissioning
TenneT DE	TTG/380/Borken-Waldeck-Twistetal/2 (Recommissioning)	D2BORK1*	D2TWIS1*	380	Commissioning
TenneT DE	TTG/380/Borken-Waldeck-Twistetal/3	D2BORK1*	D2TWIS1*	380	Decommissioning
TransnetBW	Endersbach-Großgartach-Mühlhausen-Neckarwestheim green	-	-	380	Commissioning
TransnetBW	Endersbach-Großgartach-Mühlhausen green	-	-	380	Decommissioning
TransnetBW	Bruchsal-Philippsburg-Pulverdingen white	-	-	380	Decommissioning
TransnetBW	Birkenfeld-Pulverdingen yellow	Birkenfeld	Pulverdingen	380	Commissioning
TransnetBW	Birkenfeld-Bruchsal-Philippsburg white	-	-	380	Commissioning
Terna	Turbigo-Baggio	Turbigo	Baggio	380	Decommissioning
Terna	Turbigo-Magenta	Turbigo	Magenta	380	Commissioning
Terna	Baggio-Magenta	Baggio	Magenta	380	Commissioning



Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning / Decommissioning
XTA_VA81	AST	LV_VALMIER_2	330	Commissioning
XTA_VA81	ELERING	TARTU_330	330	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
Amprion	TR 46	Vöhringen	Vöhringen	220/110	Commissioning
Amprion	TR 22	Vöhringen	Vöhringen	220/110	Decommissioning
PSE	CHS-A3	Chełm	Chełm	400/220	Commissioning
PSE	SOC-A1	Sochaczew	Sochaczew	220/110	Commissioning
TransnetBW	BMT 411	Birkenfeld	Birkenfeld	380/110	Commissioning
TransnetBW	BMT 412	Birkenfeld	Birkenfeld	380/110	Commissioning
Amprion	TR 46	Vöhringen	Vöhringen	220/110	Commissioning
Amprion	TR 22	Vöhringen	Vöhringen	220/110	Decommissioning
PSE	CHS-A3	Chełm	Chełm	400/220	Commissioning
PSE	SOC-A1	Sochaczew	Sochaczew	220/110	Commissioning
TenneT DE	TTG/380-110/Frankfurt SW/T411	D2FRSW1*	D2FRSW5*	380/110	Commissioning
TenneT DE	TTG/380-220/Großkrotzenburg/T42 2	D2GKRO1*	D2GKRO2*	380/220	Decommissioning
TransnetBW	BMT 411	Birkenfeld	Birkenfeld	380/110	Commissioning



TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
TransnetBW	BMT 412	Birkenfeld	Birkenfeld	380/110	Commissioning

Generation units – no new generation units

Appendix 7: Agreed forecast AC and DC exchanges for the Summer low demand scenario

Area Net Position

	Net Position (MW)
AL	-129
AT	311
BA	526
BE	747
BG	707
CZ	813
DE-50HERTZ	2186
DE-AMPRION	-4097
DE-TENNET_DE	1374
DE-TRANSNETBW	-3148
DK1	357
DK2	-209
EE	706
ES	-405
FI	-1086
FR	9263
GR	-850
HR	-613

HU	-1111
CH	937
IT	-6540
LT	-348
LU	-397
LV	-456
ME	39
MK	-147
NL	-2053
NO	1305
PL	200
PT	-86
RO	-900
RS	-3
SE	4229
SEM	-62
SI	-143
SK	122
TR	-650
UA	79
KS	98

Note that sign of the Net Position is as follow: - import / + export

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)	Including losses [MW]
DE-50HERTZ>DK2	-508	-503
SE>DE-TENNET_DE	350	346
DK1>NL	295	292
NL>GB	-261	-258
GR>IT	300	297
GB>SEM	40	39
LT>PL	296	293
SE>LT	100	99
SEM>GB	-23	-22
NO>NL	629	623
PL>SE	-151	-150
DK1>DK2	512	506
DK1>NO	-1248	-1235
EE>FI	-295	-292
SE>FI	769	761
DK1>SE	-740	-732
BE>DE	0	0
BE>GB	207	205
FR>GB	681	677
DE-TENNET_DE>NO	-730	-728
NO>GB	0	0

Appendix 8: Agreed forecast AC and DC exchanges for the Autumn peak scenario

Area Net Position

	Net Position (MW)
AL	-537
AT	-2500
BA	175
BE	-1820
BG	616
CZ	1463
DE-50HERTZ	6036
DE-AMPRION	-1913
DE-TENNET_DE	7751
DE-TRANSNETBW	-2945
DK1	-883
DK2	-647
EE	558
ES	-405
FI	-1274
FR	5000
GR	450
HR	-817

HU	-1841
CH	-794
IT	-6740
LT	-57
LU	-520
LV	-550
ME	186
MK	-335
NL	-494
NO	4585
PL	0
PT	-86
RO	-700
RS	-480
SE	1348
SEM	-62
SI	-291
SK	-468
TR	-650
UA	73
KS	132

Note that sign of the Net Position is as follow: - import / + export

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)	Including losses [MW]
DE-50HERTZ>DK2	-448	-443
SE>DE-TENNET_DE	318	315
DK1>NL	547	542
NL>GB	380	376
GR>IT	350	346
GB>SEM	40	39
LT>PL	278	275
SE>LT	-123	-122
SEM>GB	-23	-22
NO>NL	645	638
PL>SE	-300	-297
DK1>DK2	-10	-10
DK1>NO	-1600	-1584
EE>FI	-450	-445
SE>FI	-400	-396
DK1>SE	-513	-508
BE>DE	0	0
BE>GB	-319	-316
FR>GB	567	563
DE-TENNET_DE>NO	147	147
NO>GB	0	0

Appendix 9: System changes for the Autumn peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
APG	Nauders	ONAUDE1*	380	Commissioning
APG	Nauders	ONAUDE2*	220	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	Recklinghausen Süd	Mengede	Emscherbruch	380	Commissioning
Amprion	Bürstadt Ost	Bürstadt	Lamsheim	380	Commissioning
Amprion	Weinstraße West	Weingarten	Maximiliansau	380	Commissioning
Amprion	Bienwald West	Mutterstadt	Maximiliansau	220	Decommissioning
APG	Nauders - Westtirol 427A	ONAUDE1*	OWESTT1*	380	Commissioning
APG	Nauders - Westtirol 428A	ONAUDE1*	OWESTT1*	380	Commissioning
PSE	H009	Krajnik	Baczyna	400	Commissioning
PSE	H017	Baczyna	Plewiska	400	Commissioning
PSE	H015	Krajnik	Baczyna	400	Commissioning
PSE	H018	Baczyna	Plewiska	400	Commissioning
Swissgrid	Nauders - Pradella	Pradella	Westtirol	380	Commissioning



TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Swissgrid	Nauders - Pradella	Pradella	Westtirol	380	Commissioning
Swissgrid	Vallorcine-Y/Chatelard	Vallorcine	Y/Chatelard	220	Decommissioning
Swissgrid	Chatelard-Y/Chatelard	Chatelard	Y/Chatelard	220	Decommissioning
Swissgrid	Batiaz-Y/Chatelard	Batiaz	Y/Chatelard	220	Decommissioning
Swissgrid	Chatelard - Vallorcine	Chatelard	Vallorcine	220	Commissioning
Swissgrid	Batiaz-Chatelard 2	Batiaz	Chatelard	380	Commissioning
TenneT DE	TTG/380/Borken-Waldeck-Twistetal/3 (Recommissioning)	D2BORK1*	D2TWIS1*	380	Commissioning
TransnetBW	Daxlanden-Weingarten yellow (Germersheim-Sued)	Daxlanden	Weingarten	380	Decommissioning
TransnetBW	Daxlanden-Maximiliansau (Goldgrund Ost)	Daxlanden	Maximiliansau	380	Commissioning
TransnetBW	Daxlanden-Maximiliansu black (Goldgrund)	Daxlanden	Maximiliansau	220	Decommissioning
TransnetBW	Daxlanden-Mutterstadt (Bienwald West)	Daxlanden	Mutterstadt	220	Commissioning

Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning / Decommissioning
XDA_MA11	Amprion	D7MAXA1*	380	Commissioning
XDA_MA11	TransnetBW	Daxlanden	380	Commissioning
XDA_MA21	Amprion	D7MAXA2C	220	Decommissioning
XDA_MA21	TransnetBW	Daxlanden	220	Decommissioning
XDA_MU21	Amprion	D7MUTT2*	220	Commissioning
XDA_MU21	TransnetBW	Daxlanden	220	Commissioning
XDA_WE11	Amprion	D7WEIN1A	380	Decommissioning
XDA_WE11	TransnetBW	Daxlanden	380	Decommissioning
XNA_GL21	APG	ONAUDE21	220	Commissioning
XNA_GL21	Terna	IGLOV121	220	Commissioning
XWE_PR11	APG	OWESTT11	380	Decommissioning
XWE_PR11	Swissgrid	SPRADE11	380	Decommissioning
XNA_PR11	APG	ONAUDE11	380	Commissioning
XNA_PR11	Swissgrid	SPRADE11	380	Commissioning
XWE_PR12	APG	OWESTT11	380	Decommissioning
XWE_PR12	Swissgrid	SPRADE12	380	Decommissioning
XNA_PR12	APG	ONAUDE11	380	Commissioning
XNA_PR12	Swissgrid	SPRADE12	380	Commissioning



Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
Amprion	TR 412	Niederrhein	Niederrhein	380/110	Commissioning
Amprion	TR 212	Niederrhein	Niederrhein	220/110	Decommissioning
Amprion	TR 414	Urberach	Urberach	380/110	Commissioning
Amprion	TR 411	Urberach	Urberach	380/110	Decommissioning
Amprion	TR 412	Gersteinwerk	Gersteinwerk	380/110	Commissioning
Amprion	TR 212	Gersteinwerk	Gersteinwerk	220/110	Decommissioning
APG	Nauders RHU41	ONAUDE11	ONAUDE21	380/220	Commissioning
APG	Nauders PST1	ONAUDE21	ONAUDE22	220/220	Commissioning
APG	Nauders PST2	ONAUDE21	ONAUDE22	220/220	Commissioning
PSE	PAS-A3	Pasikowice	Pasikowice	380/110	Commissioning
TenneT DE	TTG/380-380/Wilster West/T441A	D2WILW1*	D2WILW1*	380/380	Commissioning
TenneT DE	TTG/380-380/Wilster West/T441B	D2WILW1*	D2WILW1*	380/380	Commissioning
TenneT DE	TTG/380-380/Wilster West/T442A	D2WILW1*	D2WILW1*	380/380	Commissioning
TenneT DE	TTG/380-380/Wilster West/T442B	D2WILW1*	D2WILW1*	380/380	Commissioning



Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning / Decommissioning
CGES	SR Lastva	Lastva	400	Variable Shunt Reactor	Commisioning

Appendix 10: Agreed forecast AC and DC exchanges for the Winter peak II scenario

Area Net Position

	Net Position (MW)
AL	162
AT	-3000
BA	647
BE	-964
BG	1392
CZ	1597
DE-50HERTZ	8821
DE-AMPRION	-1647
DE-TENNET_DE	6997
DE-TRANSNETBW	-3577
DK1	-384
DK2	-97
EE	838
ES	405
FI	-2276
FR	-6900
GR	-950
HR	-548

HU	-1900
CH	90
IT	-5460
LT	-742
LU	-669
LV	-36
ME	323
MK	-300
NL	591
NO	5735
PL	400
PT	86
RO	-700
RS	-782
SE	2274
SEM	62
SI	-7
SK	10
TR	150
UA	146
KS	-353

Note: that sign of the Net Position is as follow: - import / + export

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)	Including losses [MW]
DE-50HERTZ>DK2	-446	-442
SE>DE-TENNET_DE	589	583
DK1>NL	479	474
NL>GB	1062	1051
GR>IT	350	347
GB>SEM	-40	-39
LT>PL	255	252
SE>LT	102	101
SEM>GB	23	22
NO>NL	332	329
PL>SE	-300	-297
DK1>DK2	-155	-153
DK1>NO	-1600	-1584
EE>FI	-92	-91
SE>FI	-398	-394
DK1>SE	-740	-733
BE>DE	0	0
BE>GB	-39	-38
FR>GB	-1651	-1640
DE-TENNET_DE>NO	-1279	-1275
NO>GB	0	0

Appendix 11: System changes for the Winter II peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
Amprion	Laer	D7LAER2*	220	Decommissioning
APG	Weibern	OWEIBE2*	220	Commissioning
TEİAŞ	AKKUYU NGS		400	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	Laer West	Hattingen	Laer	220	Decommissioning
Amprion	Pöppinghausen West	Pöppinghausen	Laer	220	Decommissioning
APG	Aschach - St.Peter	OASCHA2*	OPETER2*	220	Decommissioning
APG	Aschach - Hausruck	OASCHA2*	OHAUSR2*	220	Decommissioning
APG	Hausruck - St. Peter	OHAUSR2*	OPETER2*	220	Decommissioning
APG	Aschach - Weibern 1	OASCHA2*	OWEIBE2*	220	Commissioning
APG	Aschach - Weibern 2	OASCHA2*	OWEIBE2*	220	Commissioning
APG	Hausruck - Weibern 1	OHAUSR2*	OWEIBE2*	220	Commissioning
APG	Hausruck - Weibern 1	OHAUSR2*	OWEIBE2*	220	Commissioning
APG	St. Peter - Weibern 1	OPETER2*	OWEIBE2*	220	Commissioning



TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
APG	St. Peter - Weibern 1	OPETER2*	OWEIBE2*	220	Commissioning
Elia	Massenhoven - Meerhout (380.22)	Massenhoven	Meerhout	380	Commissioning
Litgrid	Siauliai-Tytuvėnai	Siauliai	Tytuvėnai	330	Commissioning
MAVIR	Zugl6-Kerepes	Zugl6	Kerepes	220	Commissioning
PSE	403	Miłosna	Kozienice	400	Commissioning
PSE	H008	Ostr6w	Kromolice	400	Commissioning
TenneT DE	TTG/220/Etzenricht-Schwandorf/248	D2ETZ 2*	D2SD 2*	220	Decommissioning
TenneT DE	TTG/380/Etzenricht-Schwandorf/457	D2ETZ 1*	D2SD 1*	380	Decommissioning
TenneT DE	TTG/380/Etzenricht-Schwandorf/455	D2ETZ 1*	D2SD 1*	380	Commissioning
TenneT DE	TTG/380/Etzenricht-Schwandorf/456	D2ETZ 1*	D2SD 1*	380	Commissioning
Terna	Calenzano - S.Benedetto	Calenzano	S.Benedetto	380	Commissioning
Terna	S.Benedetto - Colunga	S.Benedetto	Colunga	380	Commissioning
Terna	Calenzano - S.Benedetto	Calenzano	S.Benedetto	220	Decommissioning
Terna	S.Benedetto - Colunga	S.Benedetto	Colunga	220	Decommissioning
TEİAŞ	ILICA ZEKİ GÜRGEN-ALPASLAN2	ILICA ZEKİ GÜRGEN	ALPASLAN2	400	Commissioning
TEİAŞ	KONYA KUZEY-AFYON2	KONYA KUZEY	AFYON2	400	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TEİAŞ	AKKUYU NGS-ERMENEK HES	AKKUYU NGS	ERMENEK HES	400	Commissioning
TEİAŞ	AKKUYU NGS-SEYDİŞEHİR	AKKUYU NGS	SEYDİŞEHİR	400	Commissioning
TEİAŞ	AKKUYU NGS-KONYA4	AKKUYU NGS	KONYA4	400	Commissioning

Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning / Decommissioning
XBI_R11_K	ENERGINET	XBI_R11_G	400	Commissioning
XBI_R21_K	ENERGINET	XBI_R21_G	400	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
MAVIR	Józsa Tr. III.	Józsa	Józsa	400/132	Commissioning
TenneT DE	TTG/380-220/Etzenricht/T421	D2ETZ 1*	D2ETZ 2*	380/220	Decommissioning
TenneT DE	TTG/380-110/Fedderwarden/T41 1	D2FEDD1*	D2FEDD5*	380/110	Commissioning
TenneT DE	TTG/380-110/Fedderwarden/T41 2	D2FEDD1*	D2FEDD5*	380/110	Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/De commissioning
Elering	SC Pussi	Pussi	330	Synchronous Condenser	Commissioning
Elering	SC Kiisa	Kiisa	330	Synchronous Condenser	Commissioning
Litgrid	SC Alytus	Alytus	330	Synchronous Condenser	Commissioning
Litgrid	SC Telši	Telši	330	Synchronous Condenser	Commissioning
PSE	Dolna Odra gen.9	Krajnik	400	Thermal (gas)	Commissioning
PSE	Dolna Odra gen.10	Krajnik	400	Thermal (gas)	Commissioning
PSE	Pątnów gen.5	Pątnów	220	Thermal (coal)	Decommissioning
PSE	Połaniec gen.1	Połaniec	110	Thermal (coal)	Decommissioning
TenneT DE	TCSC STAD_WAHL_1	Stadorf	380	Thyristor Controlled Series Capacitors (TCSC)	Commissioning
TenneT DE	TCSC STAD_WAHL_2	Stadorf	380	Thyristor Controlled Series Capacitors (TCSC)	Commissioning
TransnetBW	Marbach DT 3	Marbach	220	Thermal (oil)	Decommissioning