

**ALL TSOS' SCENARIO DEFINITION AND SCENARIO
DESCRIPTION FOR THE YEAR 2024 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 2023

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All TSOs, taking into account the following,

WHEREAS

- (1) This document is a scenario definition for year 2024 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 2024 year scenarios

All TSO's agreed on the following reference timestamp to create scenarios for 2024:

- Winter I low demand, 3rd Wednesday of January 2023, 03:30 CET,
- Winter I Peak, 3rd Wednesday of January 2023, 10:30 CET,
- Spring low demand, 3rd Wednesday of April 2022, 03:30 CET,
- Spring Peak, 3rd Wednesday of April 2022, 10:30 CET,
- Summer low demand, 3rd Wednesday of July 2022, 03:30 CET,
- Summer Peak, 3rd Wednesday of July 2022, 10:30 CET,
- Autumn low demand, 3rd Wednesday of October 2022, 03:30 CET,
- Autumn Peak, 3rd Wednesday of October 2022, 10:30 CET,
- Winter II low demand, 3rd Wednesday of December 2022, 03:30 CET,
- Winter II Peak, 3rd Wednesday of December previous 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 low demand scenario

The Winter low demand 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 January 2024 to 28th February 2024. The reference timestamp to represent this scenario is the third Wednesday in January 2023 at 03:30hrs (18th January 2023). It is the most probable representation of the Winter 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 demand 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 January 2024 to 28th 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 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.

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 January 2024 to 28th February 2024. The reference timestamp to represent this scenario is the third Wednesday in January 2023 at 10:30hrs (18th January 2023). 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 3.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st January 2024 to 28th 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 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 low demand scenario

The Spring low demand 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 2024 to 31st May 2024. The reference timestamp to represent this scenario is the third Wednesday in April 2022 at 03:30hrs (20th April 2022). It is the most probable representation of the Spring 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 demand 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 4.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st March 2024 to 31st May 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 5.

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 2024 to 31st May 2024. The reference timestamp to represent this scenario is the third Wednesday in April 2022 at 10:30hrs (20th April 2022). 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 6.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st March 2024 to 31st May 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 5.

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 low demand 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 2024 to 31st August 2024. The reference timestamp to represent this scenario is the third Wednesday in July 2022 at 03:30hrs (20th July 2022). 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 demand 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 2024 to 31st August 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 8.

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 2024 to 31st August 2024. The reference timestamp to represent this scenario is the third Wednesday in July 2022 at 10:30hrs (20th July 2022). 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 9.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st June 2024 to 31st August 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 8.

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 low demand scenario

The Autumn low demand 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 2024 to 30th November 2024. The reference timestamp to represent this scenario is the third Wednesday in October 2022 at 03:30hrs (19th October 2022). It is the most probable representation of the Autumn 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 demand 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 September 2024 to 30th November 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.

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 2024 to 30th November 2024. The reference timestamp to represent this scenario is the third Wednesday in October 2022 at 10:30hrs (19th October 2022). 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 12.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st September 2024 to 30th November 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.

Winter II low demand scenario

The Winter low demand II 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 2024 to 31st December 2024. The reference timestamp to represent this scenario is the third Wednesday in December 2022 at 03:30hrs (21th December 2022). It is the most probable representation of the Winter 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 demand 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 13.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st December 2024 to 31st December 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 14.

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 II 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 2024 to 31st December 2024. The reference timestamp to represent this scenario is the third Wednesday in December 2022 at 10:30hrs (21th December 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 15.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st December 2024 to 1st December 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 14.

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 I low demand scenario

Area Net Position

	Net Position (MW)
AL	589
AT	-2430
BA	743
BE	-669
BG	839
CH	-3279
CZ	1255
DE 50Hertz	5820
DE Transnet BW	-3431
DE_Amprion DE	-2778
DE_TenneT DE	943
DK1 West	1677
DK2 East	432
EE	103
ES	-405
FI	711
FR	11840
GB	-4655
GR	-765
HR	55
HU	-1774
IT	-6840
KS	-415
LT	-576
LU	-396
LV	423
ME	193
MK	-168
NL	483
NO	1195
PL	100
PT	-86
RO	-500
RS	-119
SE	2600

	Net Position (MW)
SEM	-62
SI	-404
SK	321
TR	-558
UA	-11

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

DC Interconnector Exchanges (in the indicated direction)

TSO_from	TSO_to	Agreed Positions (MW)	Including losses (MW)
ELIA BE	DE_Ampriion DE	-650	-637
TenneT DE	Svenska Kraftnat SE	-556	-550
National Grid GB	TenneT NL	-629	-623
Energinet West DK1	TenneT NL	493	488
National Grid GB	RTE FR	-541	-533
Eliring EE	FINGRID FI	-42	-42
Eirgrid/SONI SEM	National Grid GB	-35	-35
Svenska Kraftnat SE	FINGRID FI	-89	-88
IPTO GR	TERNA IT	300	297
RTE FR	National Grid GB	1546	1528
National Grid GB	RTE FR	-773	-762
50 Hertz DE	Energinet East DK2	-419	-414
Energinet West DK1	Svenska Kraftnat SE	-583	-577
Litgrid LT	PSE PL	312	309
Eirgrid/SONI SEM	National Grid GB	-27	-27
National Grid GB	ELIA BE	-299	-296
Litgrid LT	Svenska Kraftnat SE	-321	-318
Statnett NO	TenneT DE	771	754
TenneT NL	Statnett NO	-470	-466
Statnett NO	National Grid GB	928	842
Energinet West DK1	Statnett NO	51	51
Energinet West DK1	Energinet East DK2	-600	-594
PSE PL	Svenska Kraftnat SE	-300	-297
Energinet West DK1	National Grid GB	0	0

Appendix 2: System changes for the Winter I scenario (peak and low demand)

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
Swissgrid	Lupfig	SLUFPG2	220	Commissioning
Swissgrid	Massaboden	SMASSA2	220	Decommissioning
TEIAS	Yusufeli	TYUSUF1	380	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
50Hertz	Vierraden-Bertikow 304-303	D8VIE	D8BE	220	Commissioning
50Hertz	Vierraden-Neuenhagen 484	D8VIE	D8NHG	380	Commissioning
50Hertz	Vierraden-Neuenhagen 483	D8VIE	D8NHG	380	Commissioning
50Hertz	Eula-Herlasgrün 208-232	D8EU	D8HER	220	Commissioning
Amprion	Herdecke Nord	Eiberg	Garenfeld	220	Decommissioning
Amprion	Herdecke Süd	Eiberg	Garenfeld	220	Decommissioning
Amprion	Itterbach West	Eiberg	Reisholz	220	Decommissioning
Amprion	Grind Süd	Reisholz	St.Peter	220	Decommissioning
Amprion	Itterbach West	Eiberg	St.Peter	380	Commissioning
Amprion	Vorgebirge Ost	Rommerskirchen	Sechtem	380	Commissioning
Swissgrid	Airolo-Y/Platischachen (Provisional)	Airolo	Y/Platischachen	220	Commissioning
Swissgrid	Auwiesen-Beznau (Provisional))	Auwiesen	Beznau	220	Decommissioning
Swissgrid	Beznau-Egilsau (Provisional)	Beznau	Eglisau	220	Decommissioning
Swissgrid	Bickigen-Y/Wimmis	Bickigen	Y/Wimmis	220	Decommissioning
Swissgrid	Birr-Lupfig	Birr	Lupfig	220	Commissioning
Swissgrid	Batiaz-Y/Rosel	Batiaz	Y/Rosel	220	Decommissioning
Swissgrid	St. Triphon - Y/Rosel	St. Triphon	Y/Rosel	220	Decommissioning
Swissgrid	Riddes- Y/Rosel	Riddes	Y/Rosel	220	Decommissioning
Swissgrid	Bitsch-Massaboden	Bitsch	Massaboden	220	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Swissgrid	Breite-Eglisau (Provisional)	Breite	Eglisau	220	Decommissioning
Swissgrid	Massaboden-Y/Bitsch (Provisional)	Massaboden	Y/Bitsch	220	Decommissioning
Swissgrid	Mörel-Y/Bitsch (Provisional)	Mörel	Y/Bitsch	220	Decommissioning
Swissgrid	Wimmis-Y/Wimmis (Provisional)	Wimmis	Y/Wimmis	220	Decommissioning
Swissgrid	Bickigen-Y/Wimmis (Provisional)	Bickigen	Y/Wimmis	220	Decommissioning
Swissgrid	Chippis - Y/Wimmis (Provisional)	Chippis	Y/Wimmis	220	Decommissioning
Swissgrid	Chamoson - Y/Gstaad	Chamoson	Y/Gstaad	220	Commissioning
Swissgrid	Mühleberg - Y/Gstaad	Mühleberg	Y/Gstaad	220	Commissioning
Swissgrid	Gstaad - Y/Gstaad	Gstaad	Y/Gstaad	220	Commissioning
Swissgrid	Y/Visp-Y/Bitsch (Provisional)	Y/Visp	Y/Bitsch	220	Decommissioning
Swissgrid	Goeschenen - Y/Plattischachen	Goeschenen	Y/Plattischachen	220	Decommissioning
Swissgrid	Mettlen - Y/Plattischachen	Mettlen	Y/Plattischachen	220	Decommissioning
Swissgrid	Sils- Y/Punt	Sils	Y/Punt	380	Decommissioning
Swissgrid	Pradella-Y/Punt	Pradella	Y/Punt	380	Decommissioning
Swissgrid	Robbia-Y/Punt	Robbia	Y/Punt	380	Decommissioning
TEIAS	400kV Borcka-Ispir Havza OHL	Borcka	Ispir Havza	380	Decommissioning
TEIAS	400kV Yusufeli-Borcka OHL	Yusufeli	Borcka	380	Commissioning
TEIAS	400kV Yusufeli-Ispir Havza OHL	Yusufeli	Ispir Havza	380	Commissioning
TenneT DE	TTG/220/Raitersaich-Trennfeld/212	D2RAI 2*	D2TRE 2*	220	Commissioning
TenneT NL	Borssele-Rilland Orange	Borssele	Rilland	380	Commissioning
TenneT NL	Borssele-Rilland Purple	Borssele	Rilland	380	Commissioning

Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning/ Decommissioning
XMI_NS11	ESO	VMA_IZ11	400	Commissioning
XMI_NS11	IPTO	GNSANT1*	400	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Max angle	Commissioning / Decommissioning
Amprion	TR 212	Niederrhein	Niederrhein	220/110		Decommissioning
Amprion	TR 211	Reisholz	Reisholz	220/110		Decommissioning
Amprion	TR 442	Oberzier	Oberzier	380/380	90	Commissioning
TransnetBW	BMT412	Kupferzell	Kupferzell	380/110		Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/ Decommissioning
50Hertz	Baltic Eagle	Baltic Eagle	220	Offshore Wind Power	Commissioning
EMS	Krivaca	PRP Krivaca	110	Onshore Wind Power	Commissioning
EMS	Kostolac B G3	RP Drmno	400	Fossil Brown coal/Lignite	Commissioning
Swissgrid	Lupfig	Lupfig	220	Thermal (gas)	Commissioning
TEIAS	Yusufeli HES	Yusufeli	380	Hydroelectric PP	Commissioning
TenneT DE	Irsching3	Irsching	380	Gas	Decommissioning

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

Area Net Position

	Net Position (MW)
AL	780
AT	-1400
BA	715
BE	-84
BG	1181
CH	382
CZ	1860
DE 50Hertz	8951
DE Transnet BW	-3642
DE_Amprion DE	-1903
DE_TenneT DE	996
DK1 West	840
DK2 East	-559
EE	-203
ES	405
FI	147
FR	2000
GB	-6641
GR	-200
HR	-190

	Net Position (MW)
HU	-2200
IT	-6460
KS	-307
LT	-1083
LU	-634
LV	-87
ME	400
MK	-300
NL	493
NO	3753
PL	-200
PT	86
RO	-900
RS	-324
SE	3849
SEM	62
SI	-44
SK	241
TR	208
UA	11

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

DC Interconnector Exchanges (in the indicated direction)

TSO_from	TSO_to	Agreed Positions (MW)	Including losses (MW)
ELIA BE	DE_Ampriion DE	-460	-451
TenneT DE	Svenska Kraftnat SE	-458	-453
National Grid GB	TenneT NL	-1062	-1051
Energinet West DK1	TenneT NL	-122	-121
National Grid GB	RTE FR	-845	-833
Eliring EE	FINGRID FI	-918	-908
Eirgrid/SONI SEM	National Grid GB	49	48
Svenska Kraftnat SE	FINGRID FI	-89	-88
IPTO GR	TERNA IT	300	297
RTE FR	National Grid GB	2000	1976
National Grid GB	RTE FR	-971	-956
50 Hertz DE	Energinet East DK2	-530	-525
Energinet West DK1	Svenska Kraftnat SE	-586	-580
Litgrid LT	PSE PL	190	188
Eirgrid/SONI SEM	National Grid GB	14	13
National Grid GB	ELIA BE	-300	-297
Litgrid LT	Svenska Kraftnat SE	-646	-639
Statnett NO	TenneT DE	1115	1090
TenneT NL	Statnett NO	-589	-583
Statnett NO	National Grid GB	1400	1271
Energinet West DK1	Statnett NO	-570	-564
Energinet West DK1	Energinet East DK2	-80	-79
PSE PL	Svenska Kraftnat SE	-300	-297
Energinet West DK1	National Grid GB	0	0

Appendix 4: Agreed forecast AC and DC exchanges for the Spring low demand scenario

Area Net Position

	Net Position (MW)
AL	61
AT	100
BA	450
BE	412
BG	383
CH	-185
CZ	1470
DE 50Hertz	5480
DE Transnet BW	-1491
DE_Amprion DE	-441
DE_TenneT DE	-2210
DK1 West	-483
DK2 East	-466
EE	550
ES	405
FI	-431
FR	2836
GB	-2691
GR	-168
HR	-504

	Net Position (MW)
HU	-1219
IT	-5760
KS	-64
LT	-1188
LU	-352
LV	398
ME	-82
MK	-105
NL	-298
NO	85
PL	200
PT	86
RO	900
RS	200
SE	3105
SEM	62
SI	246
SK	490
TR	208
UA	11

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

DC Interconnector Exchanges (in the indicated direction)

TSO_from	TSO_to	Agreed Positions (MW)	Including losses (MW)
ELIA BE	DE_Amprion DE	-160	-157
TenneT DE	Svenska Kraftnat SE	-262	-260
National Grid GB	TenneT NL	-404	-400
Energinet West DK1	TenneT NL	15	15
National Grid GB	RTE FR	-390	-384
Eliring EE	FINGRID FI	-461	-456
Eirgrid/SONI SEM	National Grid GB	34	34
Svenska Kraftnat SE	FINGRID FI	857	848
IPTO GR	TERNA IT	300	297
RTE FR	National Grid GB	730	721
National Grid GB	RTE FR	-440	-433
50 Hertz DE	Energinet East DK2	-16	-16
Energinet West DK1	Svenska Kraftnat SE	-621	-615
Litgrid LT	PSE PL	332	328
Eirgrid/SONI SEM	National Grid GB	28	28
National Grid GB	ELIA BE	-406	-402
Litgrid LT	Svenska Kraftnat SE	-111	-110
Statnett NO	TenneT DE	45	44
TenneT NL	Statnett NO	-256	-253
Statnett NO	National Grid GB	259	235
Energinet West DK1	Statnett NO	-146	-145
Energinet West DK1	Energinet East DK2	184	182
PSE PL	Svenska Kraftnat SE	-300	-297
Energinet West DK1	National Grid GB	0	0

Appendix 5: System changes for the Spring scenario (peak and low demand)

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
Amprion	Schwanheim	TBD	380	Commissioning
ČEPS	Dětmarovice	CDET	400	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
50Hertz	Röhrsdorf-Herlasgrün 207-231	D8ROE	D8HER	220	Commissioning
50Hertz	Parchim/Süd-Wolmirstedt 332-322	D8PMS	D8WOL	220	Commissioning
50Hertz	Baltic Eagle 283	D8BEG	D8LUB	220	Commissioning
50Hertz	Baltic Eagle 284	D8BEG	D8LUB	220	Commissioning
Amprion	Laer West	Hattingen	Laer	220	Decommissioning
Amprion	Pöppinghausen West	Pöppinghausen	Laer	220	Decommissioning
Amprion	Schermbeck Nord	Niederrhein	Bergmannsglück	220	Decommissioning
Amprion	Pfalzdorf Nord	Niederrhein	Pfalzdorf	220	Decommissioning
Amprion	Prov. Pfalzdorf Nord/Schermbeck Nord	Niederrhein	Pfalzdorf	220	Commissioning
Amprion	Prov. Pfalzdorf Nord/Schermbeck Nord	Pfalzdorf	Bergmannsglück	220	Commissioning
Amprion	Wesel Ost	Niederrhein	Pkt. Eversael	220	Decommissioning
ČEPS	V449	Albrechtice	Dětmarovice	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

Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning/ Decommissioning
XAL_DB11	ČEPS	CALB_1D	400	Decommissioning
XAL_DB11	PSE	ZDBN341	400	Decommissioning
XDT_DB11	ČEPS	CDET_11	400	Commissioning
XDT_DB11	PSE	ZDBN341	400	Commissioning
XDO_RA11	ESO	RRAHM41	380	Decommissioning
XDO_RA11	Transelectrica	RRAHM41	380	Decommissioning
XVA_ST11	ESO	RSTUP41	380	Decommissioning
XVA_ST11	Transelectrica	RSTUP41	380	Decommissioning
XVA_MG11	ESO	RMEDG41	380	Commissioning
XVA_MG11	Transelectrica	RMEDG41	380	Commissioning
XDO_MG11	ESO	RMEDG41	380	Commissioning
XDO_MG11	Transelectrica	RMEDG41	380	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Max angle	Commissioning / Decommissioning
50Hertz	TR411	Weida	Weida	380/110		Commissioning
Amprion	TR 441	Hanekenfähr	Hanekenfähr	380/380	90	Commissioning
Amprion	TR 442	Hanekenfähr	Hanekenfähr	380/380	90	Commissioning
Amprion	TR 421	Niederrhein	Niederrhein	380/220		Commissioning
Amprion	TR 412	Dettingen	Dettingen	380/110		Commissioning
Amprion	TR 414	Kriftel	Kriftel	380/110		Commissioning
Amprion	TR 411	Schwanheim	Schwanheim	380/110		Commissioning
Amprion	TR 413	Schwanheim	Schwanheim	380/110		Commissioning
ČEPS	T401	Dětmarovice	Dětmarovice	400/110		Commissioning
ČEPS	T402	Dětmarovice	Dětmarovice	400/110		Commissioning
PSE	PAT-A3	Pątnów	Pątnów	400/110		Commissioning
TenneT DE	T421	D2ETZ 1*	D2ETZ 2*	380/220		Decommissioning
50Hertz	TR411	Weida	Weida	380/110		Commissioning
Amprion	TR 441	Hanekenfähr	Hanekenfähr	380/380	90	Commissioning
Amprion	TR 442	Hanekenfähr	Hanekenfähr	380/380	90	Commissioning
Amprion	TR 421	Niederrhein	Niederrhein	380/220		Commissioning
Amprion	TR 412	Dettingen	Dettingen	380/110		Commissioning
Amprion	TR 414	Kriftel	Kriftel	380/110		Commissioning
Amprion	TR 411	Schwanheim	Schwanheim	380/110		Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
PSE	EC Czechnica	Czechnica	110	Thermal (gas)	Commissioning
PSE	EC Czechnica	Czechnica	110	Thermal (coal)	Decommissioning
TransnetBW	Marbach 4	Marbach	220	Oil	Commissioning
PSE	EC Czechnica	Czechnica	110	Thermal (gas)	Commissioning
PSE	EC Czechnica	Czechnica	110	Thermal (coal)	Decommissioning
TransnetBW	Marbach 4	Marbach	220	Oil	Commissioning

Appendix 6: Agreed forecast AC and DC exchanges for the Spring peak scenario

Area Net Position

	Net Position (MW)
AL	242
AT	500
BA	440
BE	260
BG	288
CH	981
CZ	1350
DE 50Hertz	7571
DE Transnet BW	-590
DE_Amprion DE	-3162
DE_TenneT DE	-236
DK1 West	142
DK2 East	-738
EE	544
ES	405
FI	-756
FR	1728
GB	-6641
GR	100
HR	-510

	Net Position (MW)
HU	-1500
IT	-5860
KS	-44
LT	-1173
LU	-448
LV	389
ME	-167
MK	-250
NL	1195
NO	2505
PL	-600
PT	86
RO	500
RS	310
SE	2428
SEM	62
SI	354
SK	76
TR	208
UA	11

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

DC Interconnector Exchanges (in the indicated direction)

TSO_from	TSO_to	Agreed Positions (MW)	Including losses (MW)
ELIA BE	DE_Ampriion DE	0	0
TenneT DE	Svenska Kraftnat SE	-246	-243
National Grid GB	TenneT NL	-1025	-1014
Energinet West DK1	TenneT NL	23	22
National Grid GB	RTE FR	-797	-785
Eliring EE	FINGRID FI	-495	-490
Eirgrid/SONI SEM	National Grid GB	28	28
Svenska Kraftnat SE	FINGRID FI	740	733
IPTO GR	TERNA IT	300	297
RTE FR	National Grid GB	2000	1976
National Grid GB	RTE FR	-1000	-985
50 Hertz DE	Energinet East DK2	62	62
Energinet West DK1	Svenska Kraftnat SE	-307	-304
Litgrid LT	PSE PL	278	275
Eirgrid/SONI SEM	National Grid GB	34	34
National Grid GB	ELIA BE	-646	-640
Litgrid LT	Svenska Kraftnat SE	-23	-22
Statnett NO	TenneT DE	978	956
TenneT NL	Statnett NO	-184	-182
Statnett NO	National Grid GB	1111	1009
Energinet West DK1	Statnett NO	-248	-246
Energinet West DK1	Energinet East DK2	389	385
PSE PL	Svenska Kraftnat SE	-300	-297
Energinet West DK1	National Grid GB	0	0

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

Area Net Position

	Net Position (MW)
AL	-440
AT	-3721
BA	310
BE	968
BG	708
CH	-825
CZ	2396
DE 50Hertz	2586
DE_Transnet BW	-3472
DE_Amprion DE	-1155
DE_TenneT DE	2464
DK1 West	839
DK2 East	201
EE	911
ES	-96
FI	-717
FR	8278
GB	-4071
GR	28
HR	-537

	Net Position (MW)
HU	-1214
IT	-6929
KS	47
LT	-558
LU	-365
LV	-368
ME	49
MK	-123
NL	-33
NO	1134
PL	145
PT	-20
RO	580
RS	-213
SE	3351
SEM	-13
SI	-362
SK	605
TR	-365
UA	-3

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

DC Interconnector Exchanges (in the indicated direction)

TSO_from	TSO_to	Agreed Positions (MW)	Including losses (MW)
ELIA BE	DE_Ampriion DE	0	0
TenneT DE	Svenska Kraftnat SE	-345	-342
National Grid GB	TenneT NL	-72	-71
Energinet West DK1	TenneT NL	437	432
National Grid GB	RTE FR	-681	-671
Eliring EE	FINGRID FI	-213	-211
Eirgrid/SONI SEM	National Grid GB	-10	-10
Svenska Kraftnat SE	FINGRID FI	700	693
IPTO GR	TERNA IT	350	347
RTE FR	National Grid GB	1863	1841
National Grid GB	RTE FR	-931	-918
50 Hertz DE	Energinet East DK2	-593	-587
Energinet West DK1	Svenska Kraftnat SE	-600	-594
Litgrid LT	PSE PL	350	347
Eirgrid/SONI SEM	National Grid GB	-2	-2
National Grid GB	ELIA BE	-125	-124
Litgrid LT	Svenska Kraftnat SE	-151	-149
Statnett NO	TenneT DE	706	690
TenneT NL	Statnett NO	-251	-249
Statnett NO	National Grid GB	411	373
Energinet West DK1	Statnett NO	-131	-130
Energinet West DK1	Energinet East DK2	-268	-265
PSE PL	Svenska Kraftnat SE	-300	-297
Energinet West DK1	National Grid GB	0	0

Appendix 8: System changes for the Summer scenarios (peak and low demand)

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
TEIAS	Selvili	TSELVL1	380	Commissioning
TEIAS	Akkuyu NGS	TAKKYU1	380	Commissioning
TEIAS	Ciftlikkoy	TCFTLK1	380	Commissioning
TEIAS	Akdeniz	TAKDNZ1	380	Commissioning
TransnetBW	Birkenfeld	D4BIRK	380	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
50Hertz	Lauchstädt-Wolmirstedt 535	D8LAU	D8WOL	380	Decommissioning
50Hertz	Klostermansfeld-Wolmirstedt 535	D8KLM	D8WOL	380	Commissioning
50Hertz	Lauchstädt-Klostermansfeld 537	D8LAU	D8KLM	380	Commissioning
50Hertz	Neuenhagen-Bertikow 303	D8NHG	D8BE	220	Decommissioning
50Hertz	Neuenhagen-Vierraden 304	D8NHG	D8VIE	220	Decommissioning
50Hertz	Parchim/Süd-Perleberg 436	D8PMS	D8PE	380	Commissioning
Amprion	Weingarten	Bürstadt	Maximiliansau	220	Decommissioning
ČEPS	V224	Vítkov	Hradec	220	Decommissioning
ČEPS	V488	Vítkov	Vernéřov	400	Commissioning
PSE	1014	Oltarzew	Warszawa Towarowa	220	Commissioning
PSE	1012	Mory	Oltarzew	220	Decommissioning
PSE	C106	Mory	Warszawa Towarowa	110	Decommissioning
TEIAS	400kV Akkuyu NGS-Kizilot OHL	Akkuyu NGS	Kizilot	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TEIAS	400kV Akkuyu NGS-Ermenek OHL	Akkuyu NGS	Ermenek	380	Commissioning
TEIAS	400kV Akkuyu NGS-Seydisehir OHL	Akkuyu NGS	Seydisehir	380	Commissioning
TEIAS	400kV Akkuyu NGS-Karatay OHL	Akkuyu NGS	Karatay	380	Commissioning
TEIAS	400kV Akkuyu NGS-Akdeniz OHL	Akkuyu NGS	Akdeniz	380	Commissioning
TEIAS	400kV Akkuyu NGS-Mersin OHL	Akkuyu NGS	Mersin	380	Commissioning
TEIAS	400kV Akdeniz-Selvili OHL	Akdeniz	Selvili	380	Commissioning
TEIAS	400kV Ciftlikkoy-Bandirma DG-2 OHL	Ciftlikkoy	Bandirma DG-2	380	Commissioning
TEIAS	400kV Ciftlikkoy-Makine OSB OHL	Ciftlikkoy	Makine OSB	380	Commissioning
TEIAS	400kV Ciftlikkoy-Tepeoren Submarine Cable	Ciftlikkoy	Tepeoren	380	Commissioning
TEIAS	400kV Ciftlikkoy-Diliskelesi Submarine Cable	Ciftlikkoy	Diliskelesi	380	Commissioning
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
TransnetBW	Bruchsal-Philippensburg-Pulverdingen white			380	Decommissioning
TransnetBW	Birkenfeld-Pulverdingen yellow	Birkenfeld	Pulverdingen	380	Commissioning
TransnetBW	Birkenfeld-Bruchsal-Philippensburg white			380	Commissioning

Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning/ Decommissioning
XTSI_VA11	AST	Tsirguliina	330	Commissioning
XTSI_VA11	ELERING	Valmiera	330	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Max angle	Commissioning / Decommissioning
50Hertz	TR412	Parchim/Süd	Parchim/Süd	380/110		Commissioning
50Hertz	TR414	Jessen/Nord	Jessen/Nord	380/110		Commissioning
APG	YFPST	Ybbsfeld	Ybbsfeld	220/220	90	Commissioning
PSE	NYS-A1	Nysa	Nysa	220/110		Commissioning
PSE	NYS-A2	Nysa	Nysa	220/110		Commissioning
PSE	ROZ-A3	Rozki	Rozki	220/110		Commissioning
PSE	ZUK-A2	Żukowice	Żukowice	220/110		Commissioning
PSE	SOC-A1	Sochaczew	Sochaczew	220/110		Commissioning
TransnetBW	BMT324	Wendlingen	Wendlingen	380/220		Decommissioning
TransnetBW	BMT211	Wendlingen	Wendlingen	220/110		Decommissioning
TransnetBW	BMT413	Wendlingen	Wendlingen	380/110		Commissioning
TransnetBW	BMT 411	Birkenfeld	Birkenfeld	380/110		Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
Elering	SC Viru	Viru	330	Synchronous Condenser	Commissioning
Litgrid	SC Neris	Neris	330	Synchronous Condenser	Commissioning
TEIAS	Akkuyu NGS	Akkuyu NGS	380	Nuclear PP	Commissioning
Terna	Reattore	Tirano	220	Reactor	Commissioning
TransnetBW	Ultranet (Statcom)	Philippsburg	380	HVDC Terminal as Statcom	Commissioning

Appendix 9: Agreed forecast AC and DC exchanges for the Summer peak scenario

Area Net Position

	Net Position (MW)
AL	-194
AT	-2624
BA	235
BE	158
BG	640
CH	1521
CZ	2057
DE 50Hertz	5829
DE Transnet BW	-3377
DE_Amprion DE	-3360
DE_TenneT DE	1390
DK1 West	1429
DK2 East	-128
EE	774
ES	405
FI	-878
FR	5088
GB	-7203
GR	258
HR	-1107

	Net Position (MW)
HU	-1430
IT	-6260
KS	114
LT	-28
LU	-501
LV	-698
ME	7
MK	-133
NL	2013
NO	2669
PL	200
PT	86
RO	497
RS	-256
SE	2744
SEM	62
SI	-181
SK	-26
TR	195
UA	11

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

DC Interconnector Exchanges (in the indicated direction)

TSO_from	TSO_to	Agreed Positions (MW)	Including losses (MW)
ELIA BE	DE_Ampriion DE	0	0
TenneT DE	Svenska Kraftnat SE	-334	-330
National Grid GB	TenneT NL	-1032	-1022
Energinet West DK1	TenneT NL	316	312
National Grid GB	RTE FR	-1000	-985
Eliring EE	FINGRID FI	75	74
Eirgrid/SONI SEM	National Grid GB	35	35
Svenska Kraftnat SE	FINGRID FI	816	808
IPTO GR	TERNA IT	350	347
RTE FR	National Grid GB	2000	1976
National Grid GB	RTE FR	-1000	-985
50 Hertz DE	Energinet East DK2	-582	-576
Energinet West DK1	Svenska Kraftnat SE	-458	-454
Litgrid LT	PSE PL	110	109
Eirgrid/SONI SEM	National Grid GB	27	27
National Grid GB	ELIA BE	-742	-734
Litgrid LT	Svenska Kraftnat SE	-137	-136
Statnett NO	TenneT DE	754	737
TenneT NL	Statnett NO	-232	-230
Statnett NO	National Grid GB	1367	1241
Energinet West DK1	Statnett NO	-63	-62
Energinet West DK1	Energinet East DK2	-257	-254
PSE PL	Svenska Kraftnat SE	-300	-297
Energinet West DK1	National Grid GB	0	0

Appendix 10: Agreed forecast AC and DC exchanges for the Autumn low demand scenario

Area Net Position

	Net Position (MW)
AL	-93
AT	-1069
BA	234
BE	26
BG	216
CH	-1280
CZ	1079
DE 50Hertz	4038
DE Transnet BW	-2953
DE_Amprion DE	-1640
DE_TenneT DE	-2396
DK1 West	-449
DK2 East	-249
EE	947
ES	77
FI	-504
FR	13977
GB	-3832
GR	-182
HR	-345

	Net Position (MW)
HU	-1489
IT	-6547
KS	52
LT	-514
LU	-359
LV	-426
ME	1
MK	-147
NL	-54
NO	-263
PL	344
PT	16
RO	416
RS	-89
SE	4115
SEM	14
SI	-1168
SK	350
TR	145
UA	2

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

DC Interconnector Exchanges (in the indicated direction)

TSO_from	TSO_to	Agreed Positions (MW)	Including losses (MW)
ELIA BE	DE_Ampriion DE	-80	-78
TenneT DE	Svenska Kraftnat SE	-573	-568
National Grid GB	TenneT NL	-219	-217
Energinet West DK1	TenneT NL	-299	-296
National Grid GB	RTE FR	-642	-632
Eliring EE	FINGRID FI	-422	-418
Eirgrid/SONI SEM	National Grid GB	12	12
Svenska Kraftnat SE	FINGRID FI	706	699
IPTO GR	TERNA IT	300	297
RTE FR	National Grid GB	1784	1763
National Grid GB	RTE FR	-892	-879
50 Hertz DE	Energinet East DK2	33	33
Energinet West DK1	Svenska Kraftnat SE	-673	-667
Litgrid LT	PSE PL	320	317
Eirgrid/SONI SEM	National Grid GB	2	2
National Grid GB	ELIA BE	-428	-424
Litgrid LT	Svenska Kraftnat SE	108	107
Statnett NO	TenneT DE	614	600
TenneT NL	Statnett NO	140	138
Statnett NO	National Grid GB	-147	-134
Energinet West DK1	Statnett NO	-1015	-1005
Energinet West DK1	Energinet East DK2	70	70
PSE PL	Svenska Kraftnat SE	-300	-297
Energinet West DK1	National Grid GB	0	0

Appendix 11: System changes for the Autumn scenario (peak and low demand)

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
Amprion	Waldsee	TBD	380	Commissioning
Amprion	Maximiliansau	D7MAXA2	220	Decommissioning
TEIAS	Cinar	TCINAR1	380	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
50Hertz	Vierraden-Bertikow 304-303	D8VIE	D8BE	220	Decommissioning
50Hertz	Bertikow-Pasewalk 305-306	D8BE	D8PAS	220	Commissioning
50Hertz	Bertikow-Pasewalk 303-306	D8BE	D8PAS	220	Commissioning
Amprion	Niedersachsen Nord	Wehrendorf	Westerkappeln	380	Decommissioning
Amprion	Niedersachsen Nord	Wehrendorf	Merzen	380	Commissioning
Amprion	Bramgau Ost	Merzen	Westerkappeln	380	Commissioning
Amprion	Provisorium Gronau - Niederrhein	Gronau	Niederrhein	380	Commissioning
Amprion	Oberscholven Ost	Polsum	Oberscholven	220	Commissioning
Amprion	Oberscholven West	Polsum	Oberscholven	220	Commissioning
Amprion	Scholven D	Kusenhorst	KW Scholven	220	Decommissioning
Amprion	Scholven E	Bergmannsglück	Büscherhof	220	Decommissioning
Amprion	Knechtsteden Ost	Osterath	Rommerskirchen	380	Commissioning
Amprion	Prov. Bigge Ost/Südleitung	Opladen	Garenfeld	220	Commissioning
Amprion	Prov. Bigge Ost/Südleitung	Garenfeld	Elverlingsen	220	Commissioning
Amprion	Prov. Bigge West/Nordleitung	Opladen	Altenkleusheim	220	Commissioning
Amprion	Prov. Bigge West/Nordleitung	Altenkleusheim	Elverlingsen	220	Commissioning
Amprion	Prov. Bixterheide Nord	Bixterheide	Altenkleusheim	220	Commissioning
Amprion	Prov. Bigge Ost/Nordleitung	Bixterheide	Garenfeld	220	Commissioning
Amprion	Bigge Ost	Pkt. Ochsenkopf	Altenkleusheim	220	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	Bigge West	Pkt. Ochsenkopf	Garenfeld	220	Decommissioning
Amprion	Bixterheide Nord	Pkt. Ochsenkopf	Garenfeld	220	Decommissioning
Amprion	Nordleitung	Pkt. Ochsenkopf	Elverlingsen	220	Decommissioning
Amprion	Biblis3c	Urberach	Bürstadt	220	Decommissioning
Amprion	Ried West	Bischofsheim	Pfungstadt	380	Decommissioning
Amprion	Ried West	Pfungstadt	Bürstadt	380	Decommissioning
Amprion	Bürstadt Ost	Bürstadt	Lambsheim	380	Commissioning
Amprion	Weinstraße Ost	Lambsheim	Maximiliansau	380	Commissioning
Amprion	Weinstraße West	Weingarten	Maximiliansau	380	Commissioning
Amprion	Bienwald West	Mutterstadt	Maximiliansau	220	Decommissioning
ČEPS	V803	Nošovice	Prosenice	400	Commissioning
PSE	H011	Mikulowa	Swiebodzice	400	Commissioning
PSE	4003	Mikulowa	Swiebodzice	220	Decommissioning
Swissgrid	Bickigen-Chippis	Bickigen	Chippis	380	Commissioning
TEIAS	400kV Diyarbakir3-Batman2 OHL	Diyarbakir-3	Batman-2	380	Decommissioning
TEIAS	400kV Cinar-Diyarbakir3 OHL	Cinar	Diyarbakir-3	380	Commissioning
TEIAS	400kV Cinar-Batman-2 OHL	Cinar	Batman-2	380	Commissioning

Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning/ Decommissioning
XDA_MA11	Amprion	D7MAXA1*	380	Commissioning
XDA_MA11	TransnetBW	D4DAXL1*	380	Commissioning
XDA_MA21	Amprion	D7MAXA2*	220	Decommissioning
XDA_MA21	TransnetBW	D4DAXL2*	220	Decommissioning
XDA_MU21	Amprion	D7MUTT2*	220	Commissioning
XDA_MU21	TransnetBW	D4DAXL2*	220	Commissioning
XDA_WE11	Amprion	D7WEIN1*	380	Decommissioning
XDA_WE11	TransnetBW	D4DAXL1*	380	Decommissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Max angle	Commissioning / Decommissioning
50Hertz	TR412	Pasewalk	Pasewalk	380/110		Commissioning
50Hertz	TR203	Pasewalk	Pasewalk	220/110		Decommissioning
50Hertz	TR202	Pasewalk	Pasewalk	220/110		Decommissioning
50Hertz	TR412	Bertikow	Bertikow	380/110		Commissioning
50Hertz	TR201	Bertikow	Bertikow	220/110		Decommissioning
50Hertz	TR202	Bertikow	Bertikow	220/110		Decommissioning
50Hertz	TR203	Bertikow	Bertikow	220/110		Decommissioning
50Hertz	TR402	Vierraden	Vierraden	380/220		Decommissioning
50Hertz	TR404	Vierraden	Vierraden	380/220		Decommissioning
Amprion	TR 412	Meppen	Meppen	380/110		Commissioning
Amprion	TR 212	Kusenhorst	Kusenhorst	220/110		Decommissioning
Amprion	TR 411	Waldsee	Waldsee	380/110		Commissioning
Amprion	TR 412	Waldsee	Waldsee	380/110		Commissioning
Amprion	TR 411	Maximiliansau	Maximiliansau	380/110		Commissioning
Amprion	TR 412	Maximiliansau	Maximiliansau	380/110		Commissioning
Amprion	TR 423	Bürstadt	Bürstadt	380/220		Commissioning
Amprion	TR 422	Bürstadt	Bürstadt	380/220		Decommissioning
MAVIR	Buj Tr. No. III.	MBUJ 1*	MBUJ 4*	400/132/18		Commissioning
TenneT DE	TTG/ 380-220/ Schwandorf/ VK5	D2SD 1*	D2SD 2*	380/220		Decommissioning

TSO	Name	From	To	U [kV/kV]	Max angle	Commissioning / Decommissioning
TenneT DE	TTG /380-220 /Schwandorf/ T421	D2SD 1*	D2SD 2*	380/220		Commissioning
TransnetBW	BMT 412	Birkenfeld	Birkenfeld	380/110		Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
PSE	EC Karolin	Karolin	110	Thermal (gas)	Commissioning

Appendix 12: Agreed forecast AC and DC exchanges for the Autumn peak scenario

Area Net Position

	Net Position (MW)
AL	200
AT	-1800
BA	160
BE	1000
BG	259
CH	2484
CZ	1520
DE 50Hertz	6800
DE Transnet BW	-3506
DE_Amprion DE	-1345
DE_TenneT DE	1770
DK1 West	-711
DK2 East	-896
EE	884
ES	405
FI	-727
FR	5000
GB	-6641
GR	400
HR	-480

	Net Position (MW)
HU	-2000
IT	-6010
KS	200
LT	-220
LU	-560
LV	-604
ME	250
MK	-250
NL	756
NO	1737
PL	200
PT	86
RO	-500
RS	500
SE	2224
SEM	62
SI	-1141
SK	274
TR	208
UA	11

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

DC Interconnector Exchanges (in the indicated direction)

TSO_from	TSO_to	Agreed Positions (MW)	Including losses (MW)
ELIA BE	DE_Ampriion DE	0	0
TenneT DE	Svenska Kraftnat SE	-275	-272
National Grid GB	TenneT NL	-1062	-1051
Energinet West DK1	TenneT NL	-344	-340
National Grid GB	RTE FR	-1000	-985
Eliring EE	FINGRID FI	-278	-275
Eirgrid/SONI SEM	National Grid GB	46	46
Svenska Kraftnat SE	FINGRID FI	911	902
IPTO GR	TERNA IT	300	297
RTE FR	National Grid GB	2000	1976
National Grid GB	RTE FR	-1000	-985
50 Hertz DE	Energinet East DK2	316	313
Energinet West DK1	Svenska Kraftnat SE	-621	-614
Litgrid LT	PSE PL	181	179
Eirgrid/SONI SEM	National Grid GB	16	16
National Grid GB	ELIA BE	-954	-944
Litgrid LT	Svenska Kraftnat SE	157	156
Statnett NO	TenneT DE	733	717
TenneT NL	Statnett NO	238	236
Statnett NO	National Grid GB	563	511
Energinet West DK1	Statnett NO	-880	-871
Energinet West DK1	Energinet East DK2	600	594
PSE PL	Svenska Kraftnat SE	-300	-297
Energinet West DK1	National Grid GB	0	0

Appendix 13: Agreed forecast AC and DC exchanges for the Winter II low demand scenario

Area Net Position

	Net Position (MW)
AL	762
AT	-4184
BA	566
BE	-587
BG	591
CH	-3567
CZ	2015
DE 50Hertz	3817
DE Transnet BW	-1894
DE_Amprion DE	-744
DE_TenneT DE	332
DK1 West	-801
DK2 East	189
EE	821
ES	-260
FI	-1209
FR	13901
GB	-4313
GR	-160
HR	72

	Net Position (MW)
HU	-1738
IT	-6249
KS	-308
LT	-631
LU	-350
LV	-224
ME	146
MK	-159
NL	978
NO	530
PL	-448
PT	-54
RO	246
RS	-335
SE	3242
SEM	-39
SI	-392
SK	543
TR	-98
UA	-7

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

DC Interconnector Exchanges (in the indicated direction)

TSO_from	TSO_to	Agreed Positions (MW)	Including losses (MW)
ELIA BE	DE_Ampriion DE	-820	-804
TenneT DE	Svenska Kraftnat SE	-108	-107
National Grid GB	TenneT NL	-514	-509
Energinet West DK1	TenneT NL	276	273
National Grid GB	RTE FR	-776	-764
Eliring EE	FINGRID FI	-23	-22
Eirgrid/SONI SEM	National Grid GB	-33	-32
Svenska Kraftnat SE	FINGRID FI	783	775
IPTO GR	TERNA IT	300	297
RTE FR	National Grid GB	1551	1532
National Grid GB	RTE FR	-776	-764
50 Hertz DE	Energinet East DK2	-249	-246
Energinet West DK1	Svenska Kraftnat SE	-125	-124
Litgrid LT	PSE PL	109	108
Eirgrid/SONI SEM	National Grid GB	-6	-6
National Grid GB	ELIA BE	-283	-280
Litgrid LT	Svenska Kraftnat SE	-120	-119
Statnett NO	TenneT DE	262	256
TenneT NL	Statnett NO	-260	-258
Statnett NO	National Grid GB	454	412
Energinet West DK1	Statnett NO	-251	-248
Energinet West DK1	Energinet East DK2	-600	-594
PSE PL	Svenska Kraftnat SE	-300	-297
Energinet West DK1	National Grid GB	0	0

Appendix 14: System changes for the Winter II scenario (peak and low demand)

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
MAVIR	Göd Kelet	MGKEL	400/132	Commissioning
Terna	Torremaggiore	ITMGN11	380	Commissioning
TransnetBW	Birkenfeld	D4BIRK	220	Decommissioning
TransnetBW	Kork	D4KORK	380	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
50Hertz	Bertikow-Pasewalk 305-306	D8BE	D8PAS	220	Decommissioning
50Hertz	Bertikow-Pasewalk 303-306	D8BE	D8PAS	220	Decommissioning
50Hertz	Bertikow-Vierraden 481	D8VIE	D8BE	380	Commissioning
50Hertz	Bertikow-Vierraden 482	D8BE	D8VIE	380	Commissioning
50Hertz	Bertikow-Pasewalk 408	D8BE	D8PAS	380	Commissioning
50Hertz	Bertikow-Pasewalk 407	D8BE	D8PAS	380	Commissioning
50Hertz	Vierraden-Pasewalk 306	D8VIE	D8PAS	220	Decommissioning
50Hertz	Bertikow-Pasewalk 305	D8BE	D8PAS	220	Decommissioning
50Hertz	Röhrsdorf-Weida 573	D8ROE	D8WD	380	Commissioning
50Hertz	Weida-Remptendorf 575	D8WD	D8RE	380	Commissioning
50Hertz	Parchim/Süd-Wolmirstedt 332-322	D8PMS	D8WOL	220	Decommissioning
Amprion	Utfort W	Utfort	Pkt. St.Tönis	220	Decommissioning
Amprion	Eiserfeld	Altenkleusheim	Setzer Wiese	220	Decommissioning
MAVIR	Sajószögéd-Göd	MSAJO 1*	MGOD 1*	400	Decommissioning
MAVIR	Kerepes-Göd	MKERP 1*	MGOD 1*	400	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
MAVIR	Sajószöged-Göd Kelet	MSAJO 1*	MGKEL 1*	400	Commissioning
MAVIR	Kerepes-Göd Kelet	MKERP 1*	MGKEL 1*	400	Commissioning
MAVIR	Göd Kelet-Göd I.	MGOD 1*	MGKEL 1*	400	Commissioning
MAVIR	Göd Kelet-Göd II.	MGOD 1*	MGKEL 1*	400	Commissioning
PSE	H012	Mikulowa	Swiebodzice	400	Commissioning
PSE	4004	Mikulowa	Swiebodzice	220	Decommissioning
Terna	S. Severo - Larino	S. Severo	Larino	380	Decommissioning
Terna	S. Severo - Torremaggiore	S. Severo	Torremaggiore	380	Commissioning
Terna	Torremaggiore - Larino	Torremaggiore	Larino	380	Commissioning
TransnetBW	Birkenfeld-Daxlanden yellow	Birkenfeld	Daxlanden	220	Decommissioning
TransnetBW	Daxlanden-Eichstetten red	Daxlanden	Eichstetten	380	Decommissioning
TransnetBW	Daxlanden-Kork	Daxlanden	Kork	380	Commissioning
TransnetBW	Eichstetten-Kork	Eichstetten	Kork	380	Commissioning

Interconnections – no new connections

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Max angle	Commissioning / Decommissioning
Amprion	TR 413	Kusenhorst	Kusenhorst	380/110		Commissioning
Amprion	TR 414	Hattingen	Hattingen	380/110		Commissioning
Amprion	TR 412	Niederrhein	Niederrhein	380/110		Commissioning
MAVIR	Békéscsaba OVIT Tr. No. III.	MBEKO 1*	MBEKO 4*	400/132/18		Commissioning
MAVIR	Göd Kelet Tr. No. I.	MGKEL 1*	MGKEL 4*	400/132/18		Commissioning
MAVIR	Göd Kelet Tr. No. II.	MGKEL 1*	MGKEL 4*	400/132/18		Commissioning
MAVIR	Göd Kelet Tr. No. III.	MGKEL 1*	MGKEL 4*	400/132/18		Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
PSE	Kozienice B1	Kozienice	220	Thermal (coal)	Decommissioning
PSE	Kozienice B2	Kozienice	110	Thermal (coal)	Decommissioning

Appendix 15: Agreed forecast AC and DC exchanges for the Winter II peak scenario

Area Net Position

	Net Position (MW)
AL	950
AT	-4300
BA	830
BE	0
BG	877
CH	2268
CZ	2440
DE 50Hertz	6700
DE_Transnet BW	-3519
DE_Amprion DE	-3294
DE_TenneT DE	5481
DK1 West	2015
DK2 East	-442
EE	95
ES	405
FI	-1668
FR	2000
GB	-6641
GR	400
HR	-200

	Net Position (MW)
HU	-2200
IT	-5860
KS	-250
LT	-1044
LU	-499
LV	-126
ME	350
MK	-300
NL	812
NO	3536
PL	400
PT	86
RO	-400
RS	300
SE	274
SEM	62
SI	-44
SK	286
TR	208
UA	11

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

DC Interconnector Exchanges (in the indicated direction)

TSO_from	TSO_to	Agreed Positions (MW)	Including losses (MW)
ELIA BE	DE_Ampriion DE	-580	-568
TenneT DE	Svenska Kraftnat SE	228	226
National Grid GB	TenneT NL	-1062	-1051
Energinet West DK1	TenneT NL	24	23
National Grid GB	RTE FR	-1000	-985
Eliring EE	FINGRID FI	13	13
Eirgrid/SONI SEM	National Grid GB	24	23
Svenska Kraftnat SE	FINGRID FI	404	400
IPTO GR	TERNA IT	300	297
RTE FR	National Grid GB	2000	1976
National Grid GB	RTE FR	-1000	-985
50 Hertz DE	Energinet East DK2	-182	-181
Energinet West DK1	Svenska Kraftnat SE	90	89
Litgrid LT	PSE PL	-350	-347
Eirgrid/SONI SEM	National Grid GB	39	38
National Grid GB	ELIA BE	-832	-823
Litgrid LT	Svenska Kraftnat SE	-738	-731
Statnett NO	TenneT DE	93	91
TenneT NL	Statnett NO	222	220
Statnett NO	National Grid GB	685	622
Energinet West DK1	Statnett NO	-482	-477
Energinet West DK1	Energinet East DK2	0	0
PSE PL	Svenska Kraftnat SE	-73	-73
Energinet West DK1	National Grid GB	0	0