

**ALL TSOS' SCENARIO DEFINITION AND SCENARIO  
DESCRIPTION FOR THE YEAR 2025 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 2024

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All TSOs, taking into account the following,

### **WHEREAS**

- (1) This document is a scenario definition for year 2025 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 2025 year scenarios

All TSO's agreed on the following reference timestamp to create scenarios for 2025:

- Winter I Peak, 3<sup>rd</sup> Wednesday of January 2024, 10:30 CET,
- Spring Peak, 3<sup>rd</sup> Wednesday of April 2023, 10:30 CET,
- Summer Peak, 3<sup>rd</sup> Wednesday of July 2023, 10:30 CET,
- Autumn Peak, 3<sup>rd</sup> Wednesday of October 2023, 10:30 CET,
- Winter II Peak, 3<sup>rd</sup> Wednesday of December previous 2023, 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. The planning horizon is based on available information till May 2024.

### 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 1<sup>st</sup> January 2025 to 28<sup>th</sup> February 2025. The reference timestamp to represent this scenario is the third Wednesday in January 2024 at 10:30hrs (17<sup>th</sup> January 2024). 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 1<sup>st</sup> January 2025 to 28<sup>th</sup> February 2025. 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 1<sup>st</sup> March 2025 to 31<sup>st</sup> May 2025. The reference timestamp to represent this scenario is the third Wednesday in April 2023 at 10:30hrs (19<sup>th</sup> April 2023). 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 1<sup>st</sup> March 2025 to 31<sup>st</sup> May 2025. 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.

In the spring season it is foreseen the synchronisation of the Baltic Region with the Continental Europe synchronous system. From this moment both regions will be connected by double circuit 400 kV line Alytus – Elk. Details are provided in appendix 4.

## 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 1<sup>st</sup> June 2025 to 31<sup>st</sup> August 2025. The reference timestamp to represent this scenario is the third Wednesday in July 2023 at 10:30hrs (19<sup>th</sup> July 2023). 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 1<sup>st</sup> June 2025 to 31<sup>st</sup> August 2025. 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 1<sup>st</sup> September 2025 to 30<sup>th</sup> November 2025. The reference timestamp to represent this scenario is the third Wednesday in October 2023 at 10:30hrs (18<sup>th</sup> October 2023). 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 7.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1<sup>st</sup> September 2025 to 30<sup>th</sup> November 2025. 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.

## 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 1<sup>st</sup> December 2025 to 31<sup>st</sup> December 2025. The reference timestamp to represent this scenario is the third Wednesday in December 2023 at 10:30hrs (20<sup>th</sup> December 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 9.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1<sup>st</sup> December 2025 to 31<sup>st</sup> December 2025. 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 10.

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 peak scenario

### Area Net Position

Code	TSO	AC+DC	AC	DC
AL	OST	410	410	-
AT	APG	1000	1000	-
BE	ELIA	-722	150	-873
BA	NOSBiH	800	800	-
BG	ESO	743	743	-
HR	HOPS	-266	-266	-
CZ	CEPS	370	370	-
D8	DE_50Hertz	8330	8930	-600
D7	DE_Amprion	-6333	-6333	0
D2	DE_TenneT DE	345	1956	-1611
D4	DE_Transnet BW	-4805	-4805	-
DKW	Energinet West	770	1400	-630
DKE	Energinet East	-181	-1063	882
EE	Elering	-580	-825	245
FI	FINGRID	-1017	-372	-645
FR	RTE	2000	2478	-478
GR	IPTO	1402	1102	300
HU	MAVIR	-850	-850	-
IE-NI	Eirgrid/SONI	800	0	800
IT	TERNA	-8360	-8060	-300
KS	KOSTT	-383	-383	-
LV	AST	134	134	-
LT	Litgrid	495	691	-196
D6	Creos	-697	-697	-
MK	MEPSO	-316	-316	-
MD	Moldelectrica	-151	-151	-
ME	CGES	233	233	-
NL	TenneT NL	834	935	-101
NO	Statnett	2953	-379	3332
PL	PSE	-200	421	-621
PT	REN	86	86	-
RO	Transelectrica	483	483	-
RS	EMS	17	17	-
SK	SEPS	141	141	-
SI	ELES	-399	-399	-

Code	TSO	AC+DC	AC	DC
ES	REE	405	405	-
SE	Svenska kraftnat	3957	1815	2142
CH	SWISSGRID	-66	-66	-
TR	TEIAS	200	200	-
UA	Ukrenergo	66	66	-
GB	NG ESO	-1647	0	-1647

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

### DC Interconnector Exchanges (in the indicated direction)

Cable_name	TSO_from	TSO_to	Gross DC Flow	Net DC Flow
Alegro	ELIA	DE_Amprion	0	0
BalticCable	DE_TenneT DE	Svenska kraftnat	-211	-209
BritNed	NG ESO	TenneT NL	-373	-369
COBRA	Energinet West	TenneT NL	62	61
ElecLink	NG ESO	RTE	120	118
Estlink	Elering	FINGRID	245	243
EWIC	Eirgrid/SONI	NG ESO	500	495
FennoSkan	Svenska kraftnat	FINGRID	400	396
Grita	IPTO	TERNA	300	297
IFA	RTE	NG ESO	-239	-236
IFA2	NG ESO	RTE	120	118
Kontek	DE_50Hertz	Energinet East	-600	-594
KontiSkan	Energinet West	Svenska kraftnat	-715	-708
LitPol	Litgrid	PSE	100	99
Moyle	Eirgrid/SONI	NG ESO	300	297
NEMO	NG ESO	ELIA	873	864
NordBalt	Litgrid	Svenska kraftnat	-296	-293
NordLink	Statnett	DE_TenneT DE	1400	1369
NorNed	TenneT NL	Statnett	-412	-408
North Sea Link	Statnett	NG ESO	1400	1271
Skagerrak	Energinet West	Statnett	-119	-118
StoreBaelt	Energinet West	Energinet East	-282	-279
SwePol	PSE	Svenska kraftnat	-521	-515
Viking Link	Energinet West	NG ESO	425	411

## Appendix 2: System changes for the Winter I peak scenario

### Substations

TSO	Name of Station	U [kV/kV]	Commissioning / Decommissioning
50Hertz	Iven/West	380	Commissioning
Transelectrica	Reșița	400	Commissioning
Litgrid	DARBENAI	330	Commissioning
Litgrid	TYTUVENAI	330	Commissioning
Litgrid	PIKTUPENU VE	330	Commissioning
Swissgrid	Bassecourt 220 kV	220	Decommissioning
Swissgrid	Y/Veytaux 380 kV	380	Commissioning
Swissgrid	Campocologno 150 kV	150	Commissioning
Swissgrid	Robbia 150 kV	150	Commissioning
Swissgrid	Y/Kerzers (Prov.) 220 kV	220	Commissioning
TTG	Godenau	220	Decommissioning
NOSBiH	Hodovo	220	Commissioning

### Lines

TSO	Name	From (Name of the Station)	To (Name of the Station)	U [kV]	Commissioning / Decommissioning
Transelectrica	OHL 400 kV PORTILE DE FIER - REȘIȚA	Portile de Fier	Reșița	380	Commissioning
Litgrid	Klaipeda-Darbėnai_(LN 536)	DARBENAI	KLAIPEDA	330	Commissioning
Litgrid	Darbėnai-Bitėnai_(LN535)	DARBENAI	BITENAI	330	Commissioning
Litgrid	Tytuvėnai-Kaunas_(LN454)	TYTUVENAI	KAUNAS	330	Commissioning
Litgrid	Siauliai-Tytuvėnai_(LN 306)	TYTUVENAI	SIAULIAI	330	Commissioning
Litgrid	Syos_VE-Piktupėnai_(LN532)	SYSOS VE	PIKTUPENU VE	330	Commissioning

TSO	Name	From (Name of the Station)	To (Name of the Station)	U [kV]	Commissioning / Decommissioning
Litgrid	Bitenai-Piktupenai_(LN534)	PIKTUPENU VE	BITENAI	330	Commissioning
Swissgrid	220 kV Batiatz-Riddes	Batiatz	Riddes	220	Decommissioning
Swissgrid	220 kV Batiatz-St-Triphon	Batiatz	St. Triphon	220	Decommissioning
Swissgrid	380 kV Batiatz-Y/Veytaux	Batiatz	Y/Veytaux	380	Commissioning
Swissgrid	380 kV Romanel-Y/Veytaux	Romanel	Y/Veytaux	380	Commissioning
Swissgrid	380 kV Veytaux-Y/Veytaux	Veytaux	Y/Veytaux	380	Commissioning
Swissgrid	380 kV Batiatz-Romanel	Batiatz	Romanel	380	Decommissioning
Swissgrid	220 kV Muehleberg-Y/Kerzers	Muehleberg	Y/Kerzers	220	Commissioning
Swissgrid	220 kV Kerzers-Y/Kerzers (Prov. AIS)	Kerzers	Y/Kerzers	220	Commissioning
Swissgrid	220 kV Kerzers-Y/Kerzers (Prov. GIS)	Kerzers	Y/Kerzers	220	Commissioning
Swissgrid	380 kV Pradella-Westtirol (Inn Sued 427)	Pradella	Westtirol (Inn Sued 427)	380	Decommissioning
Swissgrid	380 kV Pradella-Westtirol (Inn Sued 428)	Pradella	Westtirol (Inn Sued 428)	380	Decommissioning
Swissgrid	380 kV Breite-Sils (Prov.)	Breite	Sils	380	Commissioning
Swissgrid	220 kV Laufenburg-Y/Lindenholz (Prov. 1)	Laufenburg	Y/Lindenholz	220	Decommissioning
Swissgrid	220 kV Muehleberg-Y/Lindenholz (Prov. 1)	Muehleberg	Y/Lindenholz	220	Decommissioning

TSO	Name	From (Name of the Station)	To (Name of the Station)	U [kV]	Commissioning / Decommissioning
Swissgrid	220 kV Lindenholz- Y/Lindenholz (Prov. 1)	Lindenholz	Y/Lindenholz	220	Decommissioning
Swissgrid	220 kV Laufenburg- Y/Laufenburg	Laufenburg	Y/Laufenburg	220	Commissioning
Swissgrid	220 kV Lindenholz- Y/Laufenburg	Lindenholz	Y/Laufenburg	220	Commissioning
Swissgrid	220 kV Lindenholz- Mühleberg	Lindenholz	Mühleberg	220	Commissioning
Swissgrid	150 kV Campocologno -Robbia	Campocologno	Robbia	150	Commissioning
Swissgrid	220 kV Chamoson- Fionnay GD 1	Chamoson	Fionnay	220	Commissioning
Swissgrid	220 kV Fionnay FMM- Riddes 1	Fionnay	Riddes	220	Commissioning
NOSBiH	Mostar 3- Trebinje II	Mostar 3	Trebinje	220	Decommissioning
NOSBiH	Mostar 3- Hodovo	Mostar 3	Hodovo	220	Commissioning
NOSBiH	Hodovo- Trebinje	Hodovo	Trebinje	220	Commissioning

### Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning/ Decommissioning
XRE_PA12	Transelectrica	RRESI41	380	Commissioning
XRE_PA12	EMS	JPANC211	380	Commissioning

## Transformers and PSTs

TSO	Name	Name of the Station	U [kV/kV]	Max angle	Commissioning / Decommissioning
50Hertz	TR412	Bertikow	380/110		Commissioning
50Hertz	TR413	Bertikow	380/110		Commissioning
TransnetBW	BMT411	Kork	380/110	0	Commissioning
PSE	BCS-A1	Baczyna	400/110		Commissioning
Transelectrica	TR 3 – 400 MVA	Reșița	380/220		Commissioning
Elia	Aubange PST 2	Aubange	220/220		commissioning
Swissgrid	220/380/50 kV Bassecourt Trafo T01.TA32	Bassecourt	220/380/50		Decommissioning
Swissgrid	380/220/50 kV Mettlen Trafo T01.TA02	Mettlen	380/220/50	9.6°	Commissioning
Swissgrid	380/150 kV Robbia Trafo 1A	Robbia	380/150		Commissioning
Swissgrid	380/150 kV Robbia Trafo 1B	Robbia	380/150		Commissioning
Amprion	TR 414	Kriftel	380/110		Commissioning
Amprion	TR 411	Schwanheim	380/110		Commissioning
Amprion	TR 412	Schwanheim	380/110		Commissioning

## Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/ Decommissioning
SEPS	EVO 5	Vojany 1	220	Thermal (coal)	Decommissioning
SEPS	EVO 6	Vojany 1	220	Thermal (coal)	Decommissioning
Elia	Doel 1	Doel	400	Nuclear	Decommissioning
Litgrid	TYTUVENAI_VE	TYTUVENAI	330	Wind	Commissioning
Litgrid	TYTUVENU_SE	TYTUVENAI	330	Solar	Commissioning
Litgrid	PIKTUPENU_VE	PIKTUPENU VE	330	Wind	Commissioning
Litgrid	TELSIAI_SK	TELSIAI	330	Synchronous condenser	Commissioning
Litgrid	ALYTUS_SK	ALYTUS	330	Synchronous condenser	Commissioning
Swissgrid	MOTTEC 0 – GENERATOR 1	Mottec	65	Hydro	Commissioning

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
Swissgrid	MOTTEC 0 – GENERATOR 2	Mottec	65	Hydro	Commissioning
Swissgrid	MOTTEC 0 – GENERATOR 3	Mottec	65	Hydro	Commissioning
Swissgrid	ARDON 0 - GENERATOR 1	Ardon	65	Hydro	Commissioning
Swissgrid	ARDON 0 - GENERATOR 2	Ardon	65	Hydro	Commissioning
Swissgrid	SILS ALBULA0 – KW ROTHENBRUNNE N EWZ	Sils Albula	60	Hydro	Commissioning
Swissgrid	SILS ALBULA0 - TRAF0 49	Sils Albula	60	Hydro	Commissioning
Swissgrid	SILS ALBULA0 – KW TIEFENCASTEL WEST	Sils Albula	60	Hydro	Commissioning
Swissgrid	CAMPOCOLOGN1 – BILANZ 1011	Campocologno	150	Hydro	Commissioning
Swissgrid	CASTASEGNA 0 – GENERATOR 1	Castasegna	11	Hydro	Commissioning
Swissgrid	CASTASEGNA 0 – GENERATOR 2	Castasegna	11	Hydro	Commissioning
Swissgrid	ERNEN 0 – GENERATOR 1	Ernen	65	Hydro	Commissioning
Swissgrid	ERNEN 0 – GENERATOR 2	Ernen	65	Hydro	Commissioning
Swissgrid	INNERTKIRCH1 - TRAF0 002 HOPFLAUENE	Innertkirchen	150	Hydro	Commissioning
Swissgrid	INNERTKIRCH1 – TRAF0 001 FUHREN	Innertkirchren	150	Hydro	Commissioning
Swissgrid	LOETSCHEN 0 – GENERATOR 1	Loetschen	65	Hydro	Commissioning
Swissgrid	LOETSCHEN 0 – GENERATOR 2	Loetschen	65	Hydro	Commissioning
Swissgrid	LOEBBIA 0 – GRUPPE 1 + PUMPE	Loebbia	11	Hydro	Commissioning
Swissgrid	LOEBBIA 0 - GRUPPE 2 + PUMPE	Loebbia	11	Hydro	Commissioning
Swissgrid	ST-LEONARD 0 - GENERATOR 1	St. Leonard	65	Hydro	Commissioning



TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
Swissgrid	ST-LEONARD 0 - GENERATOR 2	St. Leonard	65	Hydro	Commissioning
Swissgrid	LUPFIG 0 - GENERATOR 3	Lupfig	11,5	Thermal(G).	Commissioning
Swissgrid	LUPFIG 0 - GENERATOR 4	Lupfig	11,5	Thermal(G).	Commissioning
Swissgrid	LUPFIG 0 - GENERATOR 5	Lupfig	11,5	Thermal(G).	Commissioning
Swissgrid	LUPFIG 0 - GENERATOR 6	Lupfig	11,5	Thermal(G).	Commissioning
Swissgrid	LUPFIG 0 - GENERATOR 7	Lupfig	11,5	Thermal(G).	Commissioning
Swissgrid	LUPFIG 0 - GENERATOR 8	Lupfig	11,5	Thermal(G).	Commissioning
Swissgrid	PECCIA 0 - PUMPE 1	Peccia	12	Hydro	Commissioning
Swissgrid	PECCIA 0 - PUMPE 2	Peccia	12	Hydro	Commissioning
Swissgrid	ROBBIA 1 - BLOCKTRAFO 1	Robbia	150	Hydro	Commissioning
Swissgrid	ROBBIA 1 - BLOCKTRAFO 2	Robbia	150	Hydro	Commissioning
Swissgrid	ROBBIA 1 - BLOCKTRAFO 3	Robbia	150	Hydro	Commissioning
Swissgrid	ST-TRIPHON 4 - PEUFFEYRE	St. Triphon	65	Hydro	Commissioning
Swissgrid	ST-TRIPHON 4 - PONT DE LA TINE	St. Triphon	65	Hydro	Commissioning
Swissgrid	SERRA 2 - TRAFO 4	Serra	220	Hydro	Commissioning
Swissgrid	SIEBNEN 2 - TRAFO EWZ	Siebnen	220	Hydro	Commissioning
Swissgrid	VISSOIE 0 - GENERATOR 1	Vissoie	65	Hydro	Commissioning
Swissgrid	VISSOIE 0 - GENERATOR 2	Vissoie	65	Hydro	Commissioning
Swissgrid	VISSOIE 0 - GENERATOR 3	Vissoie	65	Hydro	Commissioning
Swissgrid	CHIPPIS A 0 - NAVISENCE GROUPE 1	Chippis	65	Hydro	Commissioning
Swissgrid	CHIPPIS A 0 - NAVISENCE GROUPE 2	Chippis	65	Hydro	Commissioning
Swissgrid	CHIPPIS A 0 - NAVISENCE GROUPE 3	Chippis	65	Hydro	Commissioning
NOSBIH	SE Hodovo	Hodovo	220	Solar	Commissioning

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
Transelectrica	Slatioara	Berbesti	110	Solar	Commissioning
Transelectrica	Parau	Hoghiz	110	Solar	Commissioning
Transelectrica	Sarmasag	Sarmasag	110	Solar	Commissioning
Transelectrica	Satu Mare 1	Vetis	110	Solar	Commissioning
Transelectrica	Teius	Teius	110	Solar	Commissioning
Transelectrica	Borzesti	Borzesti	110	Solar	Commissioning
Transelectrica	Ciorani	Valea Călugărescă	110	Solar	Commissioning

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

### Area Net Position

Code	TSO	AC+DC	AC	DC
AL	OST	249	249	-
AT	APG	-944	-944	-
BE	ELIA	-245	-310	65
BA	NOSBiH	901	901	-
BG	ESO	1445	1445	-
HR	HOPS	-387	-387	-
CZ	CEPS	989	989	-
D8	DE_50Hertz	6082	6511	-428
D7	DE_Amprion	-6144	-6144	0
D2	DE_TenneT DE	4102	5023	-921
D4	DE_Transnet BW	-2791	-2791	-
DKW	Energinet West	147	948	-801
DKE	Energinet East	-27	-711	684
EE	Elering	2	139	-137
FI	FINGRID	190	252	-62
FR	RTE	-1745	-1024	-721
GR	IPTO	120	-80	200
HU	MAVIR	-200	-200	-
IE-NI	Eirgrid/SONI	416	0	416
IT	TERNA	-6810	-6610	-200
KS	KOSTT	-178	-178	-
LV	AST	625	625	-
LT	Litgrid	-678	-764	86
D6	Creos	-512	-512	-
MK	MEPSO	-272	-272	-
MD	Moldelectrica	28	28	-
ME	CGES	-189	-189	-
NL	TenneT NL	1755	1384	371
NO	Statnett	-505	-2791	2286
PL	PSE	-700	-158	-542
PT	REN	86	86	-
RO	Transelectrica	683	683	-
RS	EMS	504	504	-
SK	SEPS	95	95	-
SI	ELES	-51	-51	-

Code	TSO	AC+DC	AC	DC
ES	REE	405	405	-
SE	Svenska kraftnat	3984	3250	734
CH	SWISSGRID	375	375	-
TR	TEIAS	200	200	-
UA	Ukrenergo	22	22	-
GB	NG ESO	-1128	0	-1128

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

### DC Interconnector Exchanges (in the indicated direction)

Cable_name	TSO_from	TSO_to	Gross DC Flow	Net DC Flow
Alegro	ELIA	DE_Ampron	0	0
BalticCable	DE_TenneT DE	Svenska kraftnat	-600	-594
BritNed	NG ESO	TenneT NL	-348	-344
COBRA	Energinet West	TenneT NL	-356	-352
ElecLink	NG ESO	RTE	180	178
Estlink	Elering	FINGRID	-137	-136
EWIC	Eirgrid/SONI	NG ESO	224	221
FennoSkan	Svenska kraftnat	FINGRID	199	197
Grita	IPTO	TERNA	200	198
IFA	RTE	NG ESO	-361	-356
IFA2	NG ESO	RTE	180	178
Kontek	DE_50Hertz	Energinet East	-428	-424
KontiSkan	Energinet West	Svenska kraftnat	421	417
Moyle	Eirgrid/SONI	NG ESO	192	190
NEMO	NG ESO	ELIA	-65	-64
NordBalt	Litgrid	Svenska kraftnat	86	85
NordLink	Statnett	DE_TenneT DE	321	314
NorNed	TenneT NL	Statnett	-333	-329
North Sea Link	Statnett	NG ESO	1280	1162
Skagerrak	Energinet West	Statnett	-352	-348
StoreBaelte	Energinet West	Energinet East	-256	-253
SwePol	PSE	Svenska kraftnat	-442	-438
Viking Link	Energinet West	NG ESO	-260	-251

## Appendix 4: System changes for the Spring peak scenario

### Substations

TSO	Name of Station	U [kV/kV]	Commissioning / Decommissioning
TransnetBW	Eichstetten_C1	380	Commissioning
TransnetBW	Eichstetten_C2	380	Commissioning
APG	Wagenham	380	Commissioning
APG	Pongau	380	Commissioning
APG	Pongau	220	Commissioning
APG	Matrei	380	Commissioning
Swissgrid	Y/Lindenholz (Prov.) 220 kV	220	Commissioning
TTG	Garrel Ost	220	Commissioning
TTG	Garrel Ost	380	Commissioning
Energinet	Stoustrup	400	Commissioning
Fingrid	Jylkkä synkronikompenaattori	110	Commissioning

### Lines

TSO	Name	From (Name of the Station)	To (Name of the Station)	U [kV]	Commissioning / Decommissioning
TransnetBW	Daxlanden-Eichstetten green	Daxlanden	Eichstetten	380	Decommissioning
TransnetBW	Daxlanden-Eichstetten green	Daxlanden	Eichstetten_C1	380	Commissioning
TransnetBW	Eichstetten-Eichstetten_1	Eichstetten	Eichstetten_C1	380	Commissioning
TransnetBW	Eichstetten-Eichstetten_2	Eichstetten_C1	Eichstetten_C2	380	Commissioning
TransnetBW	Eichstetten-Eichstetten_3	Eichstetten_C1	Eichstetten_C2	380	Commissioning
PSE	4003	Mikulowa	Świebodzice	220	Decommissioning
PSE	H001	Mikulowa	Świebodzice	400	Commissioning
PSE	H010	Baczyna	Krajnik	400	Commissioning
PSE	H016	Baczyna	Krajnik	400	Commissioning
PSE	4021	Gorzów	Krajnik	220	Decommissioning
PSE	4401	Baczyna	Gorzów	220	Commissioning
APG	St. Peter - Salzburg 455	St. Peter	Salzburg	220	Decommissioning

TSO	Name	From (Name of the Station)	To (Name of the Station)	U [kV]	Commissioning / Decommissioning
APG	St. Peter - Salzburg 456	St. Peter	Salzburg	220	Decommissioning
APG	Limberg - Tauern 457	Limberg	Tauern	380	Decommissioning
APG	Tauern - Weißenbach 221	Tauern	Weißenbach	220	Decommissioning
APG	Tauern - Weißenbach 222	Tauern	Weißenbach	220	Decommissioning
APG	Lienz - Tauern 452	Lienz	Tauern	380	Decommissioning
APG	St. Peter - Wagenham 455A	St. Peter	Wagenham	380	Commissioning
APG	Wagenham - Tauern 455B	Wagenham	Tauern	380	Commissioning
APG	St. Peter - Salzburg 456A	St. Peter	Salzburg	380	Commissioning
APG	Salzburg - Pongau 456B	Salzburg	Pongau	380	Commissioning
APG	Pongau - Kaprun 456C	Pongau	Kaprun	380	Commissioning
APG	Kaprun - Limberg 457A	Kaprun	Limberg	380	Commissioning
APG	Kaprun - Limberg 458	Kaprun	Limberg	380	Commissioning
APG	Pongau - Weißenbach 221	Pongau	Weißenbach	220	Commissioning
APG	Pongau - Weißenbach 222	Pongau	Weißenbach	220	Commissioning
APG	Lienz - Matri 452A	Lienz	Matri	380	Commissioning
APG	Matri - Tauern 452B	Matri	Lienz	380	Commissioning
Elia	Gramme - Rimièr 380 09	Gramme	Rimièr	380	Commissioning
Elia	Rimièr - Leval 220 543	Rimièr	Leval	220	Commissioning
TTN	Borssele - Rilland Orange	Borssele	Rilland	380	Commissioning
TTN	Borssele - Rilland Paars	Borssele	Rilland	380	Commissioning

TSO	Name	From (Name of the Station)	To (Name of the Station)	U [kV]	Commissioning / Decommissioning
Litgrid	Biténai-Kruonio_HAE_(LN448)	BITENAI	KHAE	330	Commissioning
Swissgrid	220 kV Rothenbrunn en-Rüthi	Rothenbrunnen	Rüthi	220	Commissioning
Swissgrid	220 kV Bickigen-Willisau	Bickigen	Willisau	220	Commissioning
Swissgrid	220 kV Gstaad-Mühleberg	Gstaad	Mühleberg	220	Commissioning
Swissgrid	220 kV Lindenholz-Mühleberg	Lindenholz	Mühleberg	220	Decommissioning
Swissgrid	220 kV Laufenburg-Y/Laufenburg	Laufenburg	Y/Laufenburg	220	Decommissioning
Swissgrid	220 kV Lindenholz-Y/Laufenburg	Lindenholz	Y/Laufenburg	220	Decommissioning
Swissgrid	220 kV Mühleberg-Y/Lindenholz (Prov. 2)	Mühleberg	Y/Lindenholz	220	Commissioning
Swissgrid	220 kV Lindenholz-Y/Lindenholz (Prov. 2)	Lindenholz	Y/Lindenholz	220	Commissioning
TTG	rot	Conneforde	Cloppenburg Ost/Garrel Ost	220	Commissioning
TTG	gruen	Conneforde	Cloppenburg Ost/Garrel Ost	220	Commissioning
TTG		Dipperz	Aschaffenburg/Großkrotzenburg	380	Commissioning
Energinet	Endrup-Stoustrup	Endrup	Stoustrup	400	Commissioning

### Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning/ Decommissioning
XGR_HO11	TransnetBW	D4HOEP1	380	Decommissioning
XGR_HO11	TTG	D2GR 1	380	Decommissioning
XGR_ST11	TransnetBW	D4SLDR1	380	Decommissioning
XGR_ST11	TTG	D2GR 1	380	Decommissioning
XGR_ST12	TransnetBW	D4HOE71	380	Commissioning
XGR_ST12	TTG	D2GR 1	380	Commissioning
XRE_PA11	Transelectrica	RRESI41	380	Commissioning
XRE_PA11	EMS	JPANC211	380	Commissioning

### Transformers and PSTs

TSO	Name	Name of the Station	U [kV/kV]	Max angle	Commissioning / Decommissioning
TransnetBW	BMT203	Birkenfeld	220/110	0	Decommissioning
PSE	PEL-A3	Połaniec	400/110		Commissioning
PSE	DUN-T2	Dunowo	400/110		Decommissioning
PSE	DUN-A2	Dunowo	400/110		Commissioning
PSE	BCS-A2	Baczyna	400/220		Commissioning
APG	RHU41	Tauern	380/220	60	Decommissioning
APG	RHU42	Tauern	380/220	60	Decommissioning
APG	RHU43	Tauern	380/220	60	Decommissioning
APG	TAPST	Tauern	220/220	90	Decommissioning
APG	RHU41	Pongau	380/220	60	Commissioning
APG	RHU42	Pongau	380/220	60	Commissioning
APG	RHU41	Salzburg	380/220	60	Commissioning
APG	RHU42	Salzburg	380/220	60	Commissioning
ČEPS	T202PRN	Prosenice	220/110		Decommissioning
Elia	Rimière Tfo 10	Rimière	380/220		commissioning
TTG	T423	Garrel Ost	380/220		Commissioning
TTG	T424	Garrel Ost	380/220		Commissioning
TTG	T213	Frankfurt Nord	220/110		Decommissioning
TTG	T214	Frankfurt Nord	220/110		Commissioning
Amprion	TR 442	Hanekenfähr	380/380		Commissioning
Amprion	TR 441	Hanekenfähr	380/380		Commissioning
Amprion	TR 412	Dettingen	380/110		Commissioning
Energinet	KT51	Stoustrup	400/150		Commissioning



### Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
TTG	Borwin 5	Garrel Ost	380	Wind	Commissioning
Amprion	RPSA 1	Meppen	380	Rotating phase shifter	Commissioning
Amprion	RPSA 2	Meppen	380	Rotating phase shifter	Commissioning

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

### Area Net Position

Code	TSO	AC+DC	AC	DC
AL	OST	-147	-147	-
AT	APG	-373	-373	-
BE	ELIA	26	-708	734
BA	NOSBiH	584	584	-
BG	ESO	-1041	-1041	-
HR	HOPS	-1286	-1286	-
CZ	CEPS	549	549	-
D8	DE_50Hertz	4157	4557	-400
D7	DE_Amprion	-5330	-5330	0
D2	DE_TenneT DE	-1256	744	-2000
D4	DE_Transnet BW	-2974	-2974	-
DKW	Energinet West	-476	2308	-2784
DKE	Energinet East	-688	-1678	990
EE	Elering	658	912	-253
FI	FINGRID	305	111	194
FR	RTE	4176	4239	-63
GR	IPTO	88	-62	150
HU	MAVIR	61	61	-
IE-NI	Eirgrid/SONI	112	0	112
IT	TERNA	-6597	-6447	-150
KS	KOSTT	112	112	-
LV	AST	-640	-640	-
LT	Litgrid	-156	-272	116
D6	Creos	-466	-466	-
MK	MEPSO	-197	-197	-
MD	Moldelectrica	2	2	-
ME	CGES	-99	-99	-
NL	TenneT NL	2266	2746	-480
NO	Statnett	5211	8	5203
PL	PSE	344	1044	-700
PT	REN	16	16	-
RO	Transelectrica	216	216	-
RS	EMS	-90	-90	-
SK	SEPS	567	567	-
SI	ELES	54	54	-

Code	TSO	AC+DC	AC	DC
ES	REE	77	77	-
SE	Svenska kraftnat	3418	1559	1858
CH	SWISSGRID	1320	1320	-
TR	TEIAS	23	23	-
UA	Ukrenergo	2	2	-
GB	NG ESO	-2626	0	-2626

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

### DC Interconnector Exchanges (in the indicated direction)

Cable_name	TSO_from	TSO_to	Gross DC Flow	Net DC Flow
Alegro	ELIA	DE_Amprion	0	0
BalticCable	DE_TenneT DE	Svenska kraftnat	-600	-594
BritNed	NG ESO	TenneT NL	-466	-462
COBRA	Energinet West	TenneT NL	224	221
ElecLink	NG ESO	RTE	16	15
Estlink	Elering	FINGRID	-253	-251
EWIC	Eirgrid/SONI	NG ESO	57	57
FennoSkan	Svenska kraftnat	FINGRID	59	58
Grita	IPTO	TERNA	150	149
IFA	RTE	NG ESO	-31	-31
IFA2	NG ESO	RTE	16	15
Kontek	DE_50Hertz	Energinet East	-400	-396
KontiSkan	Energinet West	Svenska kraftnat	-715	-708
Moyle	Eirgrid/SONI	NG ESO	54	54
NEMO	NG ESO	ELIA	-734	-727
NordBalt	Litgrid	Svenska kraftnat	116	114
NordLink	Statnett	DE_TenneT DE	1400	1369
NorNed	TenneT NL	Statnett	-723	-716
North Sea Link	Statnett	NG ESO	1400	1271
Skagerrak	Energinet West	Statnett	-1680	-1663
StoreBaelt	Energinet West	Energinet East	-590	-584
SwePol	PSE	Svenska kraftnat	-600	-594
Viking Link	Energinet West	NG ESO	-23	-22

## Appendix 6: System changes for the Summer peak scenario

### Substations

TSO	Name of Station	U [kV/kV]	Commissioning / Decommissioning
SEPS	Senica	380	Commissioning
SEPS	Senica	220	Decommissioning
TransnetBW	Birkenfeld	220	Decommissioning
ČEPS	Chotějovice	220	Decommissioning
Litgrid	DUBRISKIS	330	Commissioning
Swissgrid	Y/Kerzers (Prov.) 220 kV	220	Decommissioning
Fingrid	Hepokorpi	400	Commissioning

### Lines

TSO	Name	From (Name of the Station)	From (Name of the Station)	U [kV]	Commissioning / Decommissioning
SEPS	V431	Krizovany	Senica	380	Commissioning
SEPS	V283	Krizovany	Senica	220	Decommissioning
50Hertz	Röhrsdorf-Weida 574	Röhrsdorf	Weida	380	Commissioning
50Hertz	Weida-Remptendorf 576	Weida	Remptendorf	380	Commissioning
50Hertz	Röhrsdorf-Remptendorf 574	Röhrsdorf	Remptendorf	380	Decommissioning
TransnetBW	Eichstetten-Kork blue	Eichstetten	Kork	380	Decommissioning
TransnetBW	Eichstetten_C 2-Kork blue	Eichstetten_C2	Kork	380	Commissioning
PSE	430	Jasiniac	Pałnów	400	Commissioning
ČEPS	V211	Výškov	Chotějovice	220	Decommissioning
ČEPS	V210	Bezděčín	Chotějovice	220	Decommissioning
ČEPS	V479	Výškov	Chotějovice	400	Commissioning
Litgrid	Panevezys-Dubriskis_(LN 548)	PANEVEZYS	DUBRISKIS	330	Commissioning
Litgrid	Dubriskis-Utena_(LN455)	DUBRISKIS	UTENA	330	Commissioning

TSO	Name	From (Name of the Station)	From (Name of the Station)	U [kV]	Commissioning / Decommissioning
Swissgrid	220 kV Muehleberg- Y/Kerzers	Muehleberg	Y/Kerzers	220	Decommissioning
Swissgrid	220 kV Kerzers- Y/Kerzers (Prov. AIS)	Kerzers	Y/Kerzers	220	Decommissioning
Swissgrid	220 kV Kerzers- Y/Kerzers (Prov. GIS)	Kerzers	Y/Kerzers	220	Decommissioning

### Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning/ Decommissioning
XSO_KR11	SEPS	QKRIZ_12	380	Decommissioning
XSO_KR11	ČEPS	CSOK__11	400	Decommissioning
XSO_SE11	SEPS	QSENI_11	380	Commissioning
XSO_SE11	ČEPS	CSOK__11	400	Commissioning

### Transformers and PSTs

TSO	Name	Name of the Station	U [kV/kV]	Max angle	Commissioning / Decommissioning
SEPS	T201SENI	Senica	220/110		Decommissioning
SEPS	T401SENI	Senica	380/110		Commissioning
50Hertz	TR441	Vierraden	380/380		Commissioning
50Hertz	TR443	Vierraden	380/380		Commissioning
TransnetBW	BMT411	Birkenfeld	380/110	0	Commissioning
TransnetBW	BMT201/202	Birkenfeld	220/110	0	Decommissioning
TransnetBW	BMT202	Eichstetten	220/110	0	Decommissioning
TransnetBW	BMT411	Eichstetten_C1	380/110	0	Commissioning
TransnetBW	BMT402	Eichstetten	220/110	0	Decommissioning
PSE	PAT-A3	Pałnów	400/110		Commissioning
ČEPS	T201CHT	Chotějovice	220/110		Decommissioning
ČEPS	T202CHT	Chotějovice	220/110		Decommissioning
ČEPS	T401CHT	Chotějovice	400/110		Commissioning
TTG	T425	Bechterdissen	380/220		Commissioning
Amprion	TR 411	Urberach	380/110		Decommissioning
Amprion	TR 211	Urberach	220/110		Decommissioning
Amprion	TR 212	Wengerohr	220/110		Decommissioning
Fingrid	T1	Hepokorpi	400/110		Commissioning
Fingrid	T2	Hepokorpi	400/110		Commissioning

### Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
AST	LIKSNA	LIKSNA	330	Synchronous condenser	Commissioning
AST	GROBINA	GROBINA	330	Synchronous condenser	Commissioning
PSE	Grudziądz 1	Grurządz	400	Thermal (gas)	Commissioning
Elia	Awirs TG	Awirs	400	Thermal (gas)	Commissioning
Elia	Awirs TV	Awirs	400	Thermal (gas)	Commissioning
Elia	Leval 2	Rimière	220	Thermal (gas)	Commissioning
Litgrid	NERIS_SK	NERIS	330	Synchronous condenser	Commissioning
Litgrid	DUBRISKIS_VE	DUBRISKIS	330	Wind	Commissioning
Litgrid	DUBRISKIS_SE	DUBRISKIS	330	Solar	Commissioning

## Appendix 7: Agreed forecast AC and DC exchanges for the Autumn peak scenario

### Area Net Position

Code	TSO	AC+DC	AC	DC
AL	OST	-154	-154	-
AT	APG	-2692	-2692	-
BE	ELIA	-277	-198	-79
BA	NOSBiH	615	615	-
BG	ESO	-83	-83	-
HR	HOPS	-789	-789	-
CZ	CEPS	1725	1725	-
D8	DE_50Hertz	5418	5768	-350
D7	DE_Amprion	-4705	-4705	0
D2	DE_TenneT DE	1223	3223	-2000
D4	DE_Transnet BW	-5326	-5326	-
DKW	Energinet West	-1397	1420	-2817
DKE	Energinet East	-724	-1664	940
EE	Elering	603	721	-118
FI	FINGRID	347	529	-182
FR	RTE	3032	4316	-1284
GR	IPTO	655	405	250
HU	MAVIR	-252	-252	-
IE-NI	Eirgrid/SONI	400	0	400
IT	TERNA	-6410	-6160	-250
KS	KOSTT	149	149	-
LV	AST	-614	-614	-
LT	Litgrid	-60	-107	47
D6	Creos	-490	-490	-
MK	MEPSO	-276	-276	-
MD	Moldelectrica	11	11	-
ME	CGES	210	210	-
NL	TenneT NL	459	1175	-716
NO	Statnett	4149	-1054	5203
PL	PSE	400	1100	-700
PT	REN	86	86	-
RO	Transelectrica	283	283	-
RS	EMS	-59	-59	-
SK	SEPS	241	241	-
SI	ELES	-467	-467	-

Code	TSO	AC+DC	AC	DC
ES	REE	405	405	-
SE	Svenska kraftnat	3642	2189	1453
CH	SWISSGRID	300	300	-
TR	TEIAS	200	200	-
UA	Ukrenergo	19	19	-
GB	NG ESO	103	0	103

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

### DC Interconnector Exchanges (in the indicated direction)

Cable_name	TSO_from	TSO_to	Gross DC Flow	Net DC Flow
Alegro	ELIA	DE_Amprion	0	0
BalticCable	DE_TenneT DE	Svenska kraftnat	-600	-594
BritNed	NG ESO	TenneT NL	78	77
COBRA	Energinet West	TenneT NL	-85	-84
ElecLink	NG ESO	RTE	321	316
Estlink	Elering	FINGRID	-118	-117
EWIC	Eirgrid/SONI	NG ESO	214	212
FennoSkan	Svenska kraftnat	FINGRID	300	297
Grita	IPTO	TERNA	250	248
IFA	RTE	NG ESO	-642	-634
IFA2	NG ESO	RTE	321	316
Kontek	DE_50Hertz	Energinet East	-350	-347
KontiSkan	Energinet West	Svenska kraftnat	0	0
Moyle	Eirgrid/SONI	NG ESO	186	185
NEMO	NG ESO	ELIA	79	79
NordBalt	Litgrid	Svenska kraftnat	47	47
NordLink	Statnett	DE_TenneT DE	1400	1369
NorNed	TenneT NL	Statnett	-723	-716
North Sea Link	Statnett	NG ESO	1400	1271
Skagerrak	Energinet West	Statnett	-1680	-1663
StoreBaelte	Energinet West	Energinet East	-590	-584
SwePol	PSE	Svenska kraftnat	-600	-594
Viking Link	Energinet West	NG ESO	-462	-447



## Appendix 8: System changes for the Autumn peak scenario

### Substations

TSO	Name of Station	U [kV/kV]	Commissioning / Decommissioning
Litgrid	MADLINAVA	330	Commissioning
Litgrid	PIELIAI	330	Commissioning
TTG	Garrel Ost	220	Decommissioning
TTG	Helmstedt Ost	380	Commissioning
TTG	Liedingen	380	Commissioning
TTG	Bleckenstedt	380	Commissioning
TTG	Hallendorf	380	Commissioning

### Lines

TSO	Name	From (Name of the Station)	To (Name of the Station)	U [kV]	Commissioning / Decommissioning
Litgrid	Vilnius-Neris_(LN520)	NERIS	VILNIUS	330	Commissioning
Litgrid	Madlinava-Jonava_(LN317)	JONAVA	MADLINAVA	330	Commissioning
Litgrid	Madlinava-Normaneliai_(LN546)	MADLINAVA	NORMANELIAI	330	Commissioning
Litgrid	Panevezys-Normaneliai_(LN547)	NORMANELIAI	PANEVEZYS	330	Commissioning
Litgrid	Telsiai-Pieliai_(LN457)	TELSIAI	PIELIAI	330	Commissioning
Litgrid	Pieliai-Kruopiai_(LN559)	PIELIAI	KRUOPIAI	330	Commissioning
Swissgrid	220 kV Rothenbrunn n-Rüthi	Rothenbrunnen	Rüthi	220	Decommissioning
Swissgrid	220 kV Gstaad- Mühleberg	Gstaad	Mühleberg	220	Decommissioning
Swissgrid	220 kV Laufenburg-	Laufenburg	Y/Lindenholz	220	Decommissioning

TSO	Name	From (Name of the Station)	To (Name of the Station)	U [kV]	Commissioning / Decommissioning
	Y/Lindenholz (Prov. 1)				
Swissgrid	220 kV Mühleberg- Y/Lindenholz (Prov. 1)	Mühleberg	Y/Lindenholz	220	Decommissioning
Swissgrid	220 kV Lindenholz- Y/Lindenholz (Prov. 1)	Lindenholz	Y/Lindenholz	220	Decommissioning
Swissgrid	220 kV Lindenholz- Mühleberg	Lindenholz	Mühleberg	220	Commissioning
Swissgrid	220 kV Laufenburg- Y/Laufenburg	Laufenburg	Y/Laufenburg	220	Commissioning
Swissgrid	220 kV Lindenholz- Y/Laufenburg	Lindenholz	Y/Laufenburg	220	Commissioning
TTG	rot	Conneforde	Cloppenburg Ost/Garrel Ost	220	Decommissioning
TTG	gruen	Conneforde	Cloppenburg Ost/Garrel Ost	220	Decommissioning
TTG	1	Conneforde	Cloppenburg Ost	380	Commissioning
TTG	2	Conneforde	Cloppenburg Ost	380	Commissioning
TTG	1	Wahle	Helmstedt	380	Decommissioning
TTG	2	Wahle	Helmstedt	380	Decommissioning
TTG	1	Wahle	Helmstedt Ost/Helmstedt	380	Commissioning
TTG	2	Wahle	Helmstedt Ost/Helmstedt	380	Commissioning
TTG	3	Wahle	Liedingen	380	Commissioning
TTG	3	Liedingen	Lamspringe	380	Commissioning
TTG	3	Wahle	Lamspringe	380	Decommissioning
TTG	1	Liedingen	Bleckenstedt	380	Commissioning
TTG	2	Liedingen	Bleckenstedt	380	Commissioning
TTG	1	Bleckenstedt	Hallendorf	380	Commissioning
TTG	2	Bleckenstedt	Hallendorf	380	Commissioning

TSO	Name	From (Name of the Station)	To (Name of the Station)	U [kV]	Commissioning / Decommissioning
TTG		Dipperz	Aschaffenburg/Großkrotzenburg	380	Decommissioning

### Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning/ Decommissioning
XGR_HO11	TransnetBW	D4HOEP1	380	Commissioning
XGR_HO11	TTG	D2GR 1	380	Commissioning
XGR_ST11	TransnetBW	D4SLDR1	380	Commissioning
XGR_ST11	TTG	D2GR 1	380	Commissioning
XGR_ST12	TransnetBW	D4HOE71	380	Decommissioning
XGR_ST12	TTG	D2GR 1	380	Decommissioning

### Transformers and PSTs

TSO	Name	Name of the Station	U [kV/kV]	Max angle	Commissioning / Decommissioning
50Hertz	TR411	Pasewalk	380/110		Commissioning
50Hertz	TR414	Ragow	380/110		Commissioning
50Hertz	TR441	Güstrow	380/380		Commissioning
50Hertz	TR442	Güstrow	380/380		Commissioning
50Hertz	TR443	Güstrow	380/380		Commissioning
50Hertz	TR444	Güstrow	380/380		Commissioning
50Hertz	TR413	Weida	380/110		Commissioning
TransnetBW	BMT412	Birkenfeld	380/110	0	Commissioning
TransnetBW	BMT412	Eichstetten_C1	380/110	0	Commissioning
TransnetBW	BMT411	Goldshöfe	380/110	0	Commissioning
PSE	SWI-A4	Świebodzice	400/110		Commissioning
ČEPS	T201MIL	Milín	220/110		Decommissioning
ČEPS	T401VYS	Výškov	400/110		Commissioning
TTG	T413	Pirach	220/110		Commissioning
TTG	T423	Garrel Ost	380/220		Decommissioning
TTG	T424	Garrel Ost	380/220		Decommissioning
TTG	T411	Bleckenstedt	380/110		Commissioning
TTG	T413	Bleckenstedt	380/110		Commissioning
Amprion	TR 211	Ensdorf	220/110		Decommissioning
Amprion	TR 411	Ensdorf	380/110		Commissioning
Amprion	TR 412	Wengerohr	380/110		Commissioning
Amprion	TR 422	Buerstadt	380/110		Commissioning

### Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
AST	VENTSPILS	VENSTSPILS	330	Synchronous condenser	Commissioning
AST	TUME	TUME	330	BESS	Commissioning
Elia	Tihange 1	Tiha	400	Nuclear	Decommissioning
Litgrid	MADLINA_VA_VE	MADLINA_VA	330	Wind	Commissioning
Litgrid	MADLINA_VA_SE	MADLINA_VA	330	Solar	Commissioning
Litgrid	PIELIAI_VE	PIELIAI	330	Wind	Commissioning
Litgrid	PIELIAI_SE	PIELIAI	330	Solar	Commissioning

## Appendix 9: Agreed forecast AC and DC exchanges for the Winter II peak scenario

### Area Net Position

Code	TSO	AC+DC	AC	DC
AL	OST	570	570	-
AT	APG	582	582	-
BE	ELIA	-1328	-1972	644
BA	NOSBiH	927	927	-
BG	ESO	-556	-556	-
HR	HOPS	-505	-505	-
CZ	CEPS	1228	1228	-
D8	DE_50Hertz	7244	7844	-600
D7	DE_Amprion	-5258	-5258	0
D2	DE_TenneT DE	5716	7716	-2000
D4	DE_Transnet BW	-2863	-2863	-
DKW	Energinet West	-873	861	-1734
DKE	Energinet East	274	-916	1190
EE	Elering	636	801	-165
FI	FINGRID	1271	1018	253
FR	RTE	385	799	-413
GR	IPTO	139	-161	300
HU	MAVIR	-1974	-1974	-
IE-NI	Eirgrid/SONI	678	0	678
IT	TERNA	-7260	-6960	-300
KS	KOSTT	-485	-485	-
LV	AST	-355	-355	-
LT	Litgrid	-332	-446	114
D6	Creos	-511	-511	-
MK	MEPSO	-481	-481	-
MD	Moldelectrica	-226	-226	-
ME	CGES	307	307	-
NL	TenneT NL	32	793	-761
NO	Statnett	1867	-3310	5176
PL	PSE	-200	500	-700
PT	REN	86	86	-
RO	Transelectrica	-117	-117	-
RS	EMS	-430	-430	-
SK	SEPS	542	542	-
SI	ELES	-202	-202	-

Code	TSO	AC+DC	AC	DC
ES	REE	405	405	-
SE	Svenska kraftnat	4506	3208	1298
CH	SWISSGRID	-468	-468	-
TR	TEIAS	-5	-5	-
UA	Ukrenergo	15	15	-
GB	NG ESO	-3080	0	-3080

### DC Interconnector Exchanges (in the indicated direction)

Cable_name	TSO_from	TSO_to	Gross DC Flow	Net DC Flow
Alegro	ELIA	DE_Amprion	0	0
BalticCable	DE_TenneT DE	Svenska kraftnat	-600	-594
BritNed	NG ESO	TenneT NL	-120	-119
COBRA	Energinet West	TenneT NL	159	157
ElecLink	NG ESO	RTE	103	102
Estlink	Elering	FINGRID	-165	-163
EWIC	Eirgrid/SONI	NG ESO	378	374
FennoSkan	Svenska kraftnat	FINGRID	-89	-88
Grita	IPTO	TERNA	300	297
IFA	RTE	NG ESO	-207	-204
IFA2	NG ESO	RTE	103	102
Kontek	DE_50Hertz	Energinet East	-600	-594
KontiSkan	Energinet West	Svenska kraftnat	-300	-297
Moyle	Eirgrid/SONI	NG ESO	300	297
NEMO	NG ESO	ELIA	-644	-638
NordBalt	Litgrid	Svenska kraftnat	114	112
NordLink	Statnett	DE_TenneT DE	1400	1369
NorNed	TenneT NL	Statnett	-723	-716
North Sea Link	Statnett	NG ESO	1400	1271
Skagerrak	Energinet West	Statnett	-1653	-1637
StoreBaelt	Energinet West	Energinet East	-590	-584
SwePol	PSE	Svenska kraftnat	-600	-594
Viking Link	Energinet West	NG ESO	651	630

## Appendix 10: System changes for the Winter II peak scenario

### Substations

TSO	Name of Station	U [kV/kV]	Commissioning / Decommissioning
TransnetBW	Weinheim	380	Commissioning
PSE	Choczewo	400	Commissioning
ČEPS	Milín	400	Commissioning
Litgrid	KRUOPIAI	330	Commissioning
Litgrid	LAVENAI	330	Commissioning
Swissgrid	Y/Lindenholz (Prov.) 220 kV	220	Decommissioning
Fingrid	Viitajärvi	400	Commissioning
Fingrid	Honkajoki	400	Commissioning
Elering	Lihula	330/110	Commissioning

### Lines

TSO	Name	From (Name of the Station)	ToFrom (Name of the Station)	U [kV]	Commissioning / Decommissioning
TransnetBW	GKM-Neurott-Weinheim red	GKM	Neurott / Weinheim		Decommissioning
TransnetBW	GKM-Neurott red	GKM	Neurott	220	Commissioning
CGES	OHL 400kV Lastva - Pljevlja 2	Lastva	Pljevlja 2	400	Commissioning
PSE	N409	Choczewo	Żarnowiec	400	Commissioning
PSE	N410	Choczewo	Żarnowiec	400	Commissioning
ČEPS	V475	Kočín	Řeporyje	400	Decommissioning
ČEPS	V475	Kočín	Milín	400	Commissioning
ČEPS	V477	Milín	Řeporyje	400	Commissioning
Litgrid	Kruopiai-Mūša (LN558)	KRUOPIAI	MUSA	330	Commissioning
Litgrid	Panevezys-Lavenai_(LN549)	LAVENAI	PANEVEZYS	330	Commissioning
Litgrid	Lavenai-Dagiliskis_(LN550)	DAGILISKIS	LAVENAI	330	Commissioning

TSO	Name	From (Name of the Station)	ToFrom (Name of the Station)	U [kV]	Commissioning / Decommissioning
Swissgrid	221 kV Bickigen- Willisau	Bickigen	Willisau	220	Decommissioning
Fingrid	Huittinen - Forssa	Huittinen	Forssa	400	Commissioning
Fingrid	Vuennonkoski - Viitajärvi	Vuennonkoski	Viitajärvi	400	Commissioning
Elering	38T-L356----- A	Paide	Mustvee	330	Commissioning
Elering	38T-L357----- 1	Paide	Kiisa	330	Commissioning

### Interconnections

X-node	TSO	To-Node	U [kV]	Commissioning/ Decommissioning
XPF_WE11	TransnetBW	D4WNHE1	380	Commissioning
XPF_WE11	Amprion	D7PFUN1*	380	Commissioning

### Transformers and PSTs

TSO	Name	Name of the Station	U [kV/kV]	Max angle	Commissioning / Decommissioning
MAVIR	Tr. No. III.	Pécs OVIT	400/132		Commissioning
TransnetBW	BMT411	Weinheim	380/110	0	Commissioning
TTN	TR411	Geertruidenberg	380/150		Commissioning
TTN	TR414	Geertruidenberg	380/150		Commissioning
Fingrid	T1	Nuojuankangas	400/110		Commissioning
HOPS	TR 3	Konjsko	380/220		Commissioning

### Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/ Decommissioning
AST	REZEKNE	REZEKNE	330	BESS	Commissioning
PSE	Pątnów II 9	Pątnów	400	Thermal (coal)	Decommissioning
Elia	Doel 2	Doel	400	Nuclear	Decommissioning
Litgrid	KRUOPIAI_S E	KRUOPIAI	330	Solar	Commissioning
Litgrid	LAVENAI_SE	LAVENAI	330	Solar	Commissioning