

**ALL TSOS' SCENARIO DEFINITION AND SCENARIO
DESCRIPTION FOR THE YEAR 2022 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 Draft | 15 July 2021

Contents

ALL TSOS' SCENARIO DEFINITION AND SCENARIO DESCRIPTION FOR THE YEAR 2021 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	1
Final Draft 15 July 2021	1
Whereas.....	4
Common list of 2022 year scenarios	5
Winter I peak scenario I	5
Spring peak scenario	6
Summer peak scenario.....	7
Autumn peak scenario	8
Winter peak II scenario	9
Language	10
Appendix 1: Agreed forcaste AC and DC exchanges for the Winter peak I scenario.....	11
Area Net Position.....	11
DC Interconnector Exchanges (in the indicated direction).....	13
Appendix 2: System changes for the Winter peak scenario	14
Substations.....	14
Lines.....	14
Transformers and PSTs.....	16
Generation units.....	17
Appendix 3: Agreed net positions and DC link flows for the Spring peak scenario	18
Area Net Position.....	18
DC Interconnector Exchanges (in the indicated direction).....	20
Appendix 4: System changes for the Spring peak scenario	21
Substations.....	21
Lines.....	21
Transformers and PSTs	23
Appendix 5: Agreed net positions and DC link flows for the Summer peak scenario	24

Area Net Position.....	24
DC Interconnector Exchanges (in the indicated direction).....	26

Appendix 6: System changes for the Summer peak scenario..... 27

Substations.....	27
Lines.....	27
Transformers and PSTs	29
Generation units	31

Appendix 7: Agreed net positions and DC link flows for the Autumn peak scenario 32

Area Net Position.....	32
DC Interconnector Exchanges (in the indicated direction).....	34

Appendix 8: System changes for the Autumn peak scenario 35

Substations.....	35
Lines.....	35
Transformers and PSTs	37
Generation units	38

Appendix 9: Agreed net positions and DC link flows for the Winter peak II scenario 38

Area Net Position.....	38
DC Interconnector Exchanges (in the indicated direction).....	40

Appendix 10: System changes for the Winter II peak scenario 41

Substations	41
Lines	41
Transformers and PSTs	46
Generation units	48

All TSOs, taking into account the following,

WHEREAS

- (1) This document is a scenario definition for year 2022 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 2022 year scenarios

All TSO's agreed on the following reference timestamp to create scenarios for 2022:

- Winter Peak I, based on the 3rd Wednesday of January year 2021, 20.01.2021 10:30 CET;
- Spring Peak, based on the 3rd Wednesday of April year 2020, 15.04.2020 10:30 CET;
- Summer Peak, based on the 3rd Wednesday of July year 2020, 15.07.2020 10:30 CET;
- Autumn Peak, based on the 3rd Wednesday of October year 2020, 21.10.2020 10:30 CET;
- Winter Peak II, based on the 3rd Wednesday of January year 2021, 20.01.2021 10:30 CET.

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

Winter I peak scenario

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

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

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

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

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st January 2022 to 28th February 2022. The changes identified are at: substation, branch, generation or other significant plant level and are likely to influence system loading or cross border flows. These changes are listed in the scenario outline Tables for each main plant or network item in Appendix 2.

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

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

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

Spring peak scenario

The Spring peak scenario has been agreed by TSOs to meet the requirements for a year ahead model under SOGL and FCA guidance notes. It covers the period from 1st March 2022 to 31st May 2022. The reference timestamp to represent this scenario is the third Wednesday in April 2020 at 10:30hrs (15th April 2020). It is the most probable representation of the Spring peak scenario.

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

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

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

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st March 2022 to 31st May 2022. The changes identified are at: substation, branch, generation or other significant plant level and are likely to influence system loading or cross border flows. These changes are listed in the scenario outline Tables for each main plant or network item in Appendix 4.

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

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

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

Summer peak scenario

The Summer peak scenario has been agreed by TSOs to meet the requirements for a year ahead model under SOGL and FCA guidance notes. It covers the period from 1st June 2022 to 31st August 2022. The reference timestamp to represent this scenario is the third Wednesday in July 2020 at 10:30hrs (15th July 2020). It is the most probable representation of the Summer peak scenario.

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

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

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

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st June 2022 to 31st August 2022. The changes identified are at: substation, branch, generation or other significant plant level and are likely to influence system loading or cross border flows. These changes are listed in the scenario outline Tables for each main plant or network item in Appendix 6.

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

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

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

Autumn peak scenario

The Autumn peak scenario has been agreed by TSOs to meet the requirements for a year ahead model under SOGL and FCA guidance notes. It covers the period from 1st September 2022 to 30th November 2022. The reference timestamp to represent this scenario is the third Wednesday in October 2020 at 10:30hrs (21st October 2020). 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 1st September 2022 to 30th November 2022. 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 peak II scenario

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

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

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

The net positions have been agreed between all TSOs. The scenario outline Tables for each synchronous area can be found in Appendix 9.

TSOs will identify any known major system changes that are likely to change the system behaviour from 1st December 2022 to 28th February 2023. The changes identified are at: substation, branch, generation or other significant plant level and are likely to influence system loading or cross border flows. These changes are listed in the scenario outline Tables for each main plant or network item in Appendix 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 peak I scenario

Area Net Position

	Net Position (MW)
AL	-346
AT	-2000
BA	1214
BE	387
BG	429
CZ	1900
DE-50HERTZ	6482
DE-AMPRION-SCHED	-1154
DE-TENNET_DE	5340
DE-TRANSNETBW	-1384
DK1	1347
DK2	-795
EE	-736
ES	812
FI	235
FR	2000
GB	-6671
GR	-210
HR	-513
HU	-2000

CH	1162
IT	-5000
LT	-788
LU	-631
LV	-21
ME	230
MK	-350
NL	100
NO	403
PL	-211
PT	174
RO	-400
RS	-30
SE	477
SEM	297
SI	-152
SK	300
TEIAS_AREA	374
UA	76
XK	-347

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)
DE-50HERTZ>DK2	-422
SE>DE-TENNET_DE	-221
DK1>NL	700
NL>GB	965
GR>IT	-88
GB>SEM	-199
LT>PL	-50
SE>LT	656
SEM>GB	98
NO>NL	57
PL>SE	50
DK1>DK2	600
DK1>NO	114
EE>FI	-839
SE>FI	-5
DK1>SE	663
BE>DE	0
BE>GB	979
FR>GB	3617
DE-TENNET_DE>NO	819
NO>GB	813

Appendix 2: System changes for the Winter peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
Terna	Stazione 220 kV Tornolo	TNSF	220	Commissioning
Terna	SE 220/150 kV Scafati	SCTN	220/150	Commissioning
Swissgrid	Wattenwil	SWATTE2	220	Decommissioning
Swissgrid	Birr Generation	SBIRRG2	220	

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
SEPS	V275 Bystricany - P.Bystrica	QBYST_2	QPBYS_2	220	Decommissioning
SEPS	V271 Bystricany - Sucany	QBYST_2	QSUCA_21	220	Decommissioning
SEPS	V271 P.Bystrica - Sucany	QPBYS_2	QSUCA_21	220	Commissioning
SEPS	V483 Krizovany - Bystricany I	QKRIZ_11	QBYST_11	400	Commissioning
SEPS	V484 Krizovany - Bystricany II	QKRIZ_12	QBYST_11	400	Commissioning
PSE	430	Pątnów	Jasiniec	400	Commissioning
PSE	216	Pątnów	Jasiniec	220	Decommissioning
Terna	380kV Bisaccia - Deliceto	Bisaccia	Deliceto	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Terna	220kV Direzionale - Castelluccia	Direzionale	Castelluccia	220	Commissioning
Terna	220kV Astroni - Fuorigrotta	Astroni	Fuorigrotta	220	Commissioning
Terna	220kV Fuorigrotta - Napoli Centro	Fuorigrotta	Napoli Centro	220	Commissioning
Swissgrid	380kV Batiaz Romanel Provisional	SBATIA1	SROMAN1	380	Commissioning
Swissgrid	220kV Benken - Samstagern Provisional	SBENKE2	SSAMST2	220	Commissioning
Swissgrid	220kV Birr Generation - Birr	SBIRRG2	SBIRR_2	220	Commissioning
Swissgrid	220kV Seebach - Obfelden Provisional	SOBFEL2	SSEEBA2	220	Commissioning
Swissgrid	380kV Robbia - Sils Provisional	SROBBI1	SSILS 1	380	Commissioning
Swissgrid	220kV Wattenwil - Wimmis	SWATTE2	SWIMMI2	220	Decommissioning
Swissgrid	380kV Chamoson - Romanel Provisional	SCHAMO1	SROMAN1	380	Decommissioning
Swissgrid	380kV Pradella - Robbia Provisional	SPRADE1	SROBBI1	380	Decommissioning
TenneT NL	Krimpen a/d IJssel - Oostzaan 380 Zwart	Krimpen IJssel a/d	Oostzaan	380	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning	
TenneT NL	Krimpen a/d IJssel - Diemen 380 Zwart	Krimpen IJssel	a/d	Oostzaan	380	Commissioning
TenneT NL	Diemen Oostzaan 380 Zwart	Krimpen IJssel	a/d	Oostzaan	380	Commissioning
National Grid ESO	Fetteresso-Kincardine-2	FETT2	KINC2	275	Decommissioning	
National Grid ESO	Fetteresso-Tealing	FETT2	TEAL2	275	Commissioning	
National Grid ESO	Kincardine-Tealing	KINC2	TEAL2	275	Commissioning	

Interconnections – no new interconnections

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
TEL	Trafo 3 - 250 MVA Sibiu Sud (TR-SIBI4-SIBI 2-2)	Sibiu Sud	Sibiu Sud	400/110	Commissioning
TEL	AT 2 - 400 MVA lernut (TR-IERN4-IERN2-2)	Iernut	Iernut	400/220	Commissioning
PSE	PAT-A3	Piątnów	Piątnów	400/110	Commissioning
Terna	Bisaccia PST	Bisaccia	Bisaccia	380	Commissioning
Terna	ATR 1 220/150kV Scafati	Scafati	Scafati	220/150	Commissioning
Terna	ATR 2 220/150kV Scafati	Scafati	Scafati	220/150	Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning / Decommissioning
Terna	Compensatore Foggia	Foggia	380	ICS	Commissioning
Terna	Compensatore Brindisi P. ¹	Brindisi Pignicelle	380	ICS	Commissioning
Terna	Compensatore Brindisi P. ²	Brindisi Pignicelle	380	ICS	Commissioning
Terna	Compensatore Candia	Candia	380	ICS	Commissioning
Terna	Compensatore Fano	Fano	380	ICS	Commissioning
Terna	Compensatore Garigliano	Garigliano	380	ICS	Commissioning
Terna	Reattore Rotello	Rotello	380	ICS	Commissioning
National Grid ESO	Hunterston	Hunterston	400	Nuclear	Decommissioning
National Grid ESO	Moray East	Moray East	220	Wind Offshore	Commissioning

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

Area Net Position

	Net Position (MW)
AL	-492
AT	-596
BA	232
BE	-676
BG	365
CZ	1047
DE-50HERTZ	6977
DE-AMPRION-SCHED	-3493
DE-TENNET_DE	6493
DE-TRANSNETBW	-1428
DK1	582
DK2	-237
EE	-444
ES	406
FI	284
FR	6700
GB	-7286
GR	-622
HR	-525
HU	-1900

	Net Position (MW)
CH	35
IT	-4924
LT	-563
LU	-506
LV	19
ME	-311
MK	-267
NL	-1318
NO	482
PL	-400
PT	87
RO	300
RS	-120
SE	548
SEM	339
SI	124
SK	529
TEIAS_AREA	162
UA	427
XK	-30

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)
DE-50HERTZ>DK2	-27
SE>DE-TENNET_DE	269
DK1>NL	700
NL>GB	1000
GR>IT	-154
GB>SEM	-192
LT>PL	-50
SE>LT	650
SEM>GB	147
NO>NL	140
PL>SE	50
DK1>DK2	600
DK1>NO	-536
EE>FI	-288
SE>FI	-2
DK1>SE	516
BE>DE	0
BE>GB	993
FR>GB	4000
DE-TENNET_DE>NO	621
NO>GB	954

Appendix 4: System changes for the Spring peak scenario

Substations – no new substations

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TTG	APG-TTG/220/Altheim-Simbach-Sankt Peter/234-230//Y-Altheim	D2YSI 2*	D2AHM 2*	220	Commissioning
TTG	APG-TTG/220/Altheim-Simbach-Sankt Peter/234-230//Y-Simbach	D2YSI 2*	D2SI 2*	220	Commissioning
TTG	APG-TTG/220/Altheim-Simbach-Sankt Peter/234-230//Y-Sankt Peter	D2YSI 2*	XPE_SI2*	220	Commissioning
TTG	TTG/380/Grohnd e-Klein Ilsede/1	D2GROH1*	D2KILS1*	380	Decommissioning
TTG	TTG/380/Algermissen-Wahle/2	D2ALGE1*	D2WAHL1*	380	Decommissioning
TTG	TTG/380/Grohnd e-Mehrum Nord/1	D2GROH1*	D2MEHN1*	380	Commissioning
TTG	TTG/380/Algermissen-Mehrum Nord/2	D2ALGE1*	D2MEHN1*	380	Commissioning
TTG	TTG/380/Mehrum Nord-Klein Ilsede/1	D2MEHN1*	D2KILS1*	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TTG	TTG/380/Mehrum Nord-Wahle/2	D2MEHN1*	D2WAHL1*	380	Commissioning
TTG	TTG/380/Kriegenbrunn-Redwitz/432	D2RED 1*	D2KRI 1*	380	Decommissioning
TTG	TTG/380/Kriegenbrunn-Redwitz/438/432	D2RED 1*	D2KRI 1*	380	Commissioning
TTG	TTG/380/Raitersaich-Wuergau/431	D2RAI 1*	D2WG 1*	380	Decommissioning
TTG	TTG/380/Raitersaich-Kriegenbrunn/431	D2RAI 1*	D2KRI 1*	380	Commissioning
TTG	TTG/380/Kriegenbrunn-Redwitz/431	D2KRI 1*	D2WG 1*	380	Commissioning
TransnetBW	Kühmoos-Schwörstadt gn	Kühmoos	Schwörstadt	220	Commissioning
TransnetBW	Bannholz gn	Kühmoos	Schwörstadt	220	Decommissioning

Interconnections

TSO	X-node	To-Node	U [kV]	Commissioning / Decommissioning
HOPS	XZE_CI11	HZERJA1	400	Commissioning
HOPS	XZE_HE11	HZERJA1	400	Decommissioning
MAVIR	XZE_HE11	MHEVI 11	400	Decommissioning

TSO	X-node	To-Node	U [kV]	Commissioning / Decommissioning
MAVIR	XHE_CI12	MHEVI 11	400	
ELES	XHE_CI12	LCIRKO11	400	

Transformers and PSTs

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TTG	TTG/220-110/Oberbachern/Trafo NK1	D2OBA 2*	D2OBA 5*	220/110	Decommissioning
TTG	TTG/380-110/Oberbachern/Trafo 412	D2OBA 1*	D2OBA 5*	380/110	Commissioning
Transnet BW	T201	Schwörstadt	Schwörstadt	220/110	Decommissioning
Transnet BW	T211	Schwörstadt	Schwörstadt	220/110	Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning / Decommissioning
HOPS	WPP Senj	Brinje	220	WPP	Commissioning

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

Area Net Position

	Net Position (MW)
AL	-142
AT	1793
BA	402
BE	1043
BG	665
CZ	1400
DE-50HERTZ	6229
DE-AMPRION-SCHED	188
DE-TENNET_DE	-3500
DE-TRANSNETBW	-2361
DK1	-1760
DK2	-1207
EE	-524
ES	406
FI	284
FR	3700
GB	-7236
GR	-451
HR	-800
HU	-1550

CH	4960
IT	-5424
LT	-625
LU	-383
LV	172
ME	99
MK	-250
NL	1878
NO	482
PL	-400
PT	87
RO	-401
RS	-10
SE	548
SEM	274
SI	224
SK	900
TEIAS_AREA	313
UA	627
XK	350

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)
DE-50HERTZ>DK2	257
SE>DE-TENNET_DE	-600
DK1>NL	-700
NL>GB	962
GR>IT	-364
GB>SEM	-173
LT>PL	-50
SE>LT	141
SEM>GB	101
NO>NL	-657
PL>SE	-571
DK1>DK2	596
DK1>NO	-1128
EE>FI	-786
SE>FI	110
DK1>SE	639
BE>DE	0
BE>GB	1000
FR>GB	4000
DE-TENNET_DE>NO	770
NO>GB	1000

Appendix 6: System changes for the Summer peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
APG	Zaya	OZAYA 1*	380	Commissioning
APG	Zaya	OZAYA 2*	220	Commissioning
RTE	Les Ayres	FAYRES	400	Commissioning
National Grid ESO	Millbrook	MILL4	400	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
ESO	PLOVDIV-MARITSA IZTOK-CK-2	VPLOVD11	VMA_IZ11	400	Commissioning
PSE	1105	Miłosna	Praga	220	Commissioning
PSE	1106	Praga	Mory	220	Commissioning
PSE	1101	Miłosna	Mory	220	Decommissioning
TTG	TTG/380/Mechlenreuth-Redwitz/469	D2RED 1*	D2MH 1*	380	Decommissioning
TTG	TTG/380/Mechlenreuth-Redwitz/477	D2RED 1*	D2MH 1*	380	Commissioning
APG	Bisamberg Sarasdorf	-	OBISAM11	380	Decommissioning
APG	Bisamberg - Zaya	OBISAM1*	OZAYA 1*	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning	
APG	Sarasdorf - Zaya	OSARA 1*	OZAYA 1*	380	Commissioning	
TransnetBW	Großgartach-Heilbronn rd	Großgartach	Heilbronn	380	Decommissioning	
TransnetBW	Großgartach-Heilbronn rd	Großgartach C2	Heilbronn	380	Commissioning	
TransnetBW	Großgartach-Kupferzell wh	Großgartach	Kupferzell	380	Decommissioning	
TransnetBW	Großgartach-Kupferzell wh	Großgartach C2	Kupferzell	380	Commissioning	
RTE	Ayres - Ruèyres	Ayres	Ruèyres	380	Commissioning	
RTE	Ayres - Gaudière	Ayres	Gaudière	380	Commissioning	
RTE	Gaudière - Ruèyres	Gaudière	Ruèyres	380	Decommissioning	
National Grid ESO	Grendon-Sundon-1	GREN4	SUND4	400	Decommissioning	
National Grid ESO	Grendon-Sundon-2	GREN4	SUND4	400	Decommissioning	
National Grid ESO	Grendon-Millbrook-Sundon-1	GREN4	Mill4	SUND4	400	Commissioning
National Grid ESO	Grendon-Millbrook-Sundon-2	GREN4	Mill4	SUND4	400	Commissioning
Amprion	SETZE N	Pkt.Fellinghausen	Eiserfeld	220	Decommissioning	
Amprion	EISERF	Pkt.Fellinghausen	Eiserfeld	220	Decommissioning	
Amprion	Eiserfeld Dauersberg 1	-	Eiserfeld	Dauersberg	220	Commissioning
Amprion	Eiserfeld Dauersberg 2	-	Eiserfeld	Dauersberg	220	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning	
Amprion	WEINGT	BASF W 210	Maximiliansau	220	Decommissioning	
Amprion	Lambsheim - BASF W210	Mutterstadt	BASF W 210	220	Commissioning	
Amprion	Buerstadt Maximiliansau	-	Bürstadt	Maximiliansau	220	Commissioning
Amprion	REINAU W	Bürstadt	Y-Reinau	220	Decommissioning	
Amprion	REINAU W	Y-Reinau	Pfungstadt	220	Decommissioning	
Amprion	Buerstadt Lambsheim	-	Bürstadt	Y-Mutterstadt	220	Decommissioning

Interconnections

TSO	X-node	To-Node	U [kV]	Commissioning / Decommissioning
APG	XBI_SO_21	OBISAM21	220	Decommissioning
APG	XBI_SO_22	OBISAM21	220	Decommissioning
APG	XZA_SO21	OZAYA 21	220	Commissioning
APG	XZA_SO22	OZAYA 21	220	Commissioning
ČEPS	XBI_SO21	CSOK_21	220	Decommissioning
ČEPS	XBI_SO22	CSOK_22	220	Decommissioning
ČEPS	XZA_SO21	CSOK_21	220	Commissioning
ČEPS	XZA_SO22	CSOK_22	220	Commissioning
APG	XBI_SO_21	OBISAM21	220	Decommissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
PSE	NYS-A1	Nysa	Nysa	220/110	Commissioning
PSE	NYS-A2	Nysa	Nysa	220/110	Commissioning
TTG	TTG/380-220/Schwandorf/Trafo VK5	D2SD 1*	D2SD 2*	380/220	Decommissioning
TTG	TTG/380-220/Schwandorf/Trafo 421	D2SD 1*	D2SD 2*	380/220	Commissioning
TTG	TTG/380-110/Unterweser/Trafo 411	D2UWES1*	D2UWES5*	380/110	Decommissioning
TTG	TTG/380-110/Unterweser/Trafo 412	D2UWES1*	D2UWES5*	380/110	Commissioning
TTG	TTG/380-220/Unterweser/Trafo 421	D2UWES1*	D2UWES2*	380/220	Decommissioning
TTG	TTG/380-220/Unterweser/Trafo 422	D2UWES1*	D2UWES2*	380/220	Commissioning
APG	Zaya RHU41	OZAYA 1*	OZAYA 2*	380/220	Commissioning
Amprion	TR 214	Urberach	Urberach	220/110	Decommissioning
Amprion	TR 413	Urberach	Urberach	400/110	Commissioning
Amprion	TR 211	Pfungstadt	Pfungstadt	220/110	Decommissioning
Amprion	TR 413	Pfungstadt	Pfungstadt	400/110	Commissioning

Generation units

TSO	Name	Name of Substation		U [kV]	Type	Commissioning / Decommissioning
KOSTT	WPP Selac	Selac		110	WPP	Commissioning
Terna	Compensatore Madia	1	Madia	380	ICS	Commissioning
Terna	Compensatori Madia	2	Madia	380	ICS	Commissioning

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

Area Net Position

	Net Position (MW)
AL	-339
AT	-944
BA	441
BE	325
BG	429
CZ	1700
DE-50HERTZ	7250
DE-AMPRION-SCHED	748
DE-TENNET_DE	2000
DE-TRANSNETBW	-2869
DK1	-1138
DK2	-1727
EE	-502
ES	812
FI	425
FR	4777
GB	-6671
GR	-258
HR	-400
HU	-1594

CH	2990
IT	-4849
LT	-645
LU	-441
LV	-148
ME	-500
MK	-222
NL	-1707
NO	723
PL	-461
PT	174
RO	-222
RS	-147
SE	822
SEM	302
SI	298
SK	500
TEIAS_AREA	168
UA	560
XK	340

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)
DE-50HERTZ>DK2	600
SE>DE-TENNET_DE	-600
DK1>NL	51
NL>GB	1000
GR>IT	-210
GB>SEM	-201
LT>PL	-50
SE>LT	658
SEM>GB	101
NO>NL	222
PL>SE	50
DK1>DK2	600
DK1>NO	-369
EE>FI	-587
SE>FI	2
DK1>SE	-21
BE>DE	0
BE>GB	1000
FR>GB	3609
DE-TENNET_DE>NO	524
NO>GB	760

Appendix 8: System changes for the Autumn peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
PSE	Baczyna	ZBCS	400	Commissioning
TTG	Klixbuell Sued	D2KLIS1*	380	Commissioning
National Grid ESO	Yaxley	YAXL4	400	Commissioning
Amprion	Mettmann	TBD	400	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
ČEPS	V428	Výškov	Babylon	400	Commissioning
PSE	212	Ząbkowice	Nysa	220	Commissioning
PSE	3504	Nysa	Groszowice	220	Commissioning
PSE	211	Ząbkowice	Groszowice	220	Decommissioning
PSE	H009	Krajnik	Baczyna	400	Commissioning
PSE	H017	Baczyna	Plewiska	400	Commissioning
TTG	TTG/380/Mechlenr euth-Redwitz/476	D2RED 1*	D2MH 1*	380	Commissioning
TTG	TTG/380/Husum Nord-Klixbuell Sued/1	D2HUSN1*	D2KLIS1*	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning	
TTG	TTG/380/Husum Nord-Klixbuell Sued/2	D2HUSN1*	D2KLIS1*	380	Commissioning	
National Grid ESO	Bramford-Norwich Main-1	BRFO4	NORM4	400	Decommissioning	
National Grid ESO	Bramford-Norwich Main-2	BRFO4	NORM4	400	Decommissioning	
National Grid ESO	Bramford-Yaxley-Norwich Main - 1	BRFO4	YAXL4	NORM4	400	Commissioning
National Grid ESO	Bramford-Yaxley-Norwich Main - 2	BRFO4	YAXL4	NORM4	400	Commissioning
Amprion	VILLE W	Rommerskirchen	Sechtem	400	Decommissioning	
Amprion	MITREI	Sechtem	Weißenthurm	400	Decommissioning	
Amprion	VILLE W	Rommerskirchen	Y-Sechtem	400	Commissioning	
Amprion	VILLE W	Sechtem	Y-Sechtem	400	Commissioning	
Amprion	MITREI	Y-Sechtem	Weißenthurm	400	Commissioning	
Amprion	BIBLIS3C	Y-Biblis	Urberach	220	Decommissioning	
Amprion	ITTERB O	Mettmann	Itterbach	220	Decommissioning	
Amprion	OERKHS W	Ohligs	Eiberg	400	Decommissioning	
Amprion	OERKHS O	Eiberg	Y-Ohligs	400	Decommissioning	
Amprion	Eiberg - Mettmann 1	Eiberg	Mettmann	400	Commissioning	
Amprion	Eiberg - Mettmann 2	Eiberg	Mettmann	400	Commissioning	
Amprion	Mettmann - Opladen	Mettmann	Y-Ohligs	400	Commissioning	
Amprion	Mettmann - Y-Ohligs	Mettmann	Y-Ohligs	400	Commissioning	
Amprion	Ohligs - Y-Ohligs	Ohligs	Y-Ohligs	400	Commissioning	

Interconnections

TSO	X-node	To-Node	U [kV]	Commissioning / Decommissioning
SEPS	XSO_SE21	QSENI_2	220	Decommissioning
ČEPS	XSO_SE21	CSOK_22	220	Decommissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
TTG	TTG/380-110/Klixbuell Sued/Trafo 411	D2KLIS1*	D2KLIS5*	380/110	Commissioning
TTG	TTG/380-110/Klixbuell Sued/Trafo 412	D2KLIS1*	D2KLIS5*	380/110	Commissioning
TTG	TTG/380-110/Klixbuell Sued/Trafo 413	D2KLIS1*	D2KLIS5*	380/110	Commissioning
Amprion	TR 211	Mettmann	Mettmann	220/110	Decommissioning
Amprion	TR 411	Mettmann	Mettmann	400/110	Commissioning
Amprion	TR 412	Mettmann	Mettmann	400/110	Commissioning
Amprion	TR 412	Opladen	Opladen	400/110	Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/De commissioning
Elia	Doel 3	Doel	400	Nuc	Decommissioning
Terna	Reattore M.C. Vetere	Santa M.C.Vetere	380	ICS	Commissioning
Terna	UP_Levante_3	Marghera Levante	220	Thermal	Decommissioning

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

Area Net Position

	Net Position (MW)
AL	-346
AT	-2000
BA	1214
BE	-500
BG	433
CZ	1900
DE-50HERTZ	7086
DE-AMPRION-SCHED	-1627
DE-TENNET_DE	5817
DE-TRANSNETBW	-1459
DK1	-166
DK2	-447

EE	-753
ES	833
FI	242
FR	1000
GB	-6641
GR	-220
HR	-400
HU	-2000
CH	2500
IT	-5020
LT	-789
LU	-651
LV	610
ME	200
MK	-350
NL	100
NO	415
PL	-198
PT	179
RO	-500
RS	251
SE	490
SEM	299
SI	-151
SK	300

TEIAS_AREA	400
UA	279
XK	-330

DC Interconnector Exchanges (in the indicated direction)

	Agreed Positions (MW)
DE-50HERTZ>DK2	-579
SE>DE-TENNET_DE	-496
DK1>NL	700
NL>GB	1000
GR>IT	346
GB>SEM	-174
LT>PL	-50
SE>LT	196
SEM>GB	125
NO>NL	376
PL>SE	37
DK1>DK2	343
DK1>NO	-432
EE>FI	-686
SE>FI	18
DK1>SE	548
BE>DE	0
BE>GB	979
FR>GB	3446

DE-TENNET_DE>NO	1062
NO>GB	917

Appendix 10: System changes for the Winter II peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
TTG	Godenau	D2GODE2*	220	Decommissioning
TTG	Erzhausen	D2ERZH2*	220	Decommissioning
TTG	Hardegsen	D2HARD2*	220	Decommissioning
TTG	Lamspringe	D2LAMS*	380	Commissioning
TTG	Hardegsen	D2HARD1*	380	Commissioning
TTG	Erzhausen	D2ERZH1*	380	Commissioning
TTG	Alfstedt	D2ALFS1*	380	Decommissioning
TTG	Alfstedt	D2ALFS1*	380	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
PSE	6007	Dunowo	Żydowo-Kierzkowo	220	Commissioning
PSE	6601	Dunowo	Żydowo	220	Decommissioning
PSE	6301	Żydowo	Żydowo-Kierzkowo	220	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
PSE	219	Piła Krzewina	Żydowo-Kierzkowo	220	Commissioning
PSE	218	Piła Krzewina	Żydowo	220	Decommissioning
PSE	H015	Krajnik	Baczyna	400	Commissioning
PSE	H018	Baczyna	Plewiska	400	Commissioning
PSE	M001	Krajnik	Plewiska	400	Decommissioning
TTG	TTG/220/Godenau -Lehrte/1	D2GODE2*	D2LEHR2*	220	Decommissioning
TTG	TTG/220/Godenau -Erzhausen-Hardegsen-Goettingen/3//Y-Godenau	D2YERZ2*	D2GODE2*	220	Decommissioning
TTG	TTG/220/Godenau -Erzhausen-Hardegsen-Goettingen/3//Y-Erzhausen	D2YERZ2*	D2ERZH2*	220	Decommissioning
TTG	TTG/220/Godenau -Erzhausen-Hardegsen-Goettingen/3//Y-Goettingen	D2HARD2*	D2GOET2*	220	Decommissioning
TTG	TTG/220/Godenau -Erzhausen-Hardegsen-Goettingen/3//Y-Hardegsen	D2YERZ2*	D2HARD2*	220	Decommissioning
TTG	TTG/220/Hardegsen-Erzhausen-Lehrte/2//Y-Lehrte	D2YERZ2*	D2LEHR2*	220	Decommissioning
TTG	TTG/220/Hardegsen-Erzhausen-Lehrte/2//Y-Erzhausen	D2YERZ2*	D2ERZH2*	220	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TTG	TTG/220/Hardegsen-Erzhausen-Lehrte/2//Y-Hardegessen	D2YERZ2*	D2HARD2*	220	Decommissioning
TTG	TTG/220/Goettingen-Hardegessen/1	D2GOET2*	D2HARD2*	220	Decommissioning
TTG	TTG/380/Wahle-Lamspringe/3	D2WAHL1*	D2LAMS1*	380	Commissioning
TTG	TTG/380/Wahle-Lamspringe/4	D2WAHL1*	D2LAMS1*	380	Commissioning
TTG	TTG/380/Lamspringe-Erzhausen-Hardegessen/4//Y-Lamspringe	D2YERZ1*	D2LAMS1*	380	Commissioning
TTG	TTG/380/Lamspringe-Erzhausen-Hardegessen/4//Y-Erzhausen	D2YERZ1*	D2ERZH1*	380	Commissioning
TTG	TTG/380/Lamspringe-Erzhausen-Hardegessen/4//Y-Hardegessen	D2YERZ1*	D2HARD1*	380	Commissioning
TTG	TTG/380/Lamspringe-Erzhausen-Hardegessen/5//Y-Lamspringe	D2YERZ1*	D2LAMS1*	380	Commissioning
TTG	TTG/380/Lamspringe-Erzhausen-Hardegessen/5//Y-Erzhausen	D2YERZ1*	D2ERZH1*	380	Commissioning
TTG	TTG/380/Lamspringe-Erzhausen-Hardegessen/5//Y-Hardegessen	D2YERZ1*	D2HARD1*	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TTG	TTG/380/Dollern-Alfstedt-Farge/bl//Y-Farge	D2YALF1*	D2FARG1*	380	Decommissioning
TTG	TTG/380/Dollern-Alfstedt-Farge/bl//Y-Alfstedt	D2YALF1*	D2ALFS1*	380	Decommissioning
TTG	TTG/380/Dollern-Alfstedt-Farge/bl//Y-Dollern	D2YALF1*	D2DOLL1*	380	Decommissioning
TTG	TTG/380/Dollern-Alfstedt-Elsfleth W/sw//Y-Elsfleth W	D2YALF1*	D2ELWE1*	380	Decommissioning
TTG	TTG/380/Dollern-Alfstedt-Elsfleth W/sw//Y-Alfstedt	D2YALF1*	D2ALFS1*	380	Decommissioning
TTG	TTG/380/Dollern-Alfstedt-Elsfleth W/sw//Y-Dollern	D2YALF1*	D2DOLL1*	380	Decommissioning
TTG	TTG/380/Dollern-Alfstedt/sw	D2DOLL1*	D2ALFS1*	380	Commissioning
TTG	TTG/380/Dollern-Alfstedt/bl	D2DOLL1*	D2ALFS1*	380	Commissioning
TTG	TTG/380/Alfstedt-Elsfleth W/sw	D2ALFS1*	D2ELWE1*	380	Commissioning
TTG	TTG/380/Alfstedt-Farge/bl	D2ALFS1*	D2FARG1*	380	Commissioning
TTG	TTG/220/Connefor de-Emden O-Emden Borssum/sw//Y-Emden Borssum	D2YEMO2*	D2EMDB2*	220	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TTG	TTG/220/Connefor de-Emden O-Emden Borssum/sw/Y-Emden O	D2YEMO2*	D2EMOS2*	220	Decommissioning
TTG	TTG/220/Connefor de-Emden O-Emden Borssum/sw/Y-Conneforde	D2YEMO2*	D2CONN2*	220	Decommissioning
TTG	TTG/220/Connefor de-Emden O-Emden Borssum/ws/Y-Conneforde	D2YEMO2*	D2CONN2*	220	Decommissioning
TTG	TTG/380/Connefor de-Emden O/bl	D2CONN1*	D2EMOS1*	380	Commissioning
TTG	TTG/380/Connefor de-Emden O/ge	D2CONN1*	D2EMOS1*	380	Commissioning
TenneT NL	Borssele - Rilland 380	Borssele	Rilland	380	Commissioning
TenneT NL	Borssele - Rilland 380	Borssele	Rilland	380	Commissioning
Amprion	GUENZ S	Vöhringen	Gundelfingen	400	Decommissioning
Amprion	Gundelfingen Leipheim -	Gundelfingen	Leipheim	400	Commissioning
Amprion	Leipheim 1 - KW	Leipheim	KW Leipheim	400	Commissioning
Amprion	Leipheim Voehrigen -	Vöhringen	Leipheim	400	Commissioning
Amprion	Leipheim 2 - KW	Leipheim	KW Leipheim	400	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	REINAU O	Bürstadt	Y-Pfungstadt	220	Decommissioning
Amprion	REINAU O	Y-Reinau	Hoheneck	220	Decommissioning
Amprion	Bischofsheim Pfungstadt	-	Bischofsheim	Pfungstadt	400
Amprion	RIED W	Bischofsheim	Y-Pfungstadt	400	Decommissioning

Interconnections – no new interconnections

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
PSE	CHS-A3	Chełm	Chełm	440/220	Commissioning
TTG	TTG/220-110/Hardegsen/Trafo 213	D2HARD2*	D2HARD5*	220/110	Decommissioning
TTG	TTG/220-110/Hardegsen/Trafo 211	D2HARD2*	D2HARD5*	220/110	Decommissioning
TTG	TTG/220-110/Godenau/Trafo 212A	D2GODE2*	D2GODE5*	220/110	Decommissioning
TTG	TTG/220-110/Godenau/Trafo 212B	D2GODE2*	D2GODE5*	220/110	Decommissioning
TTG	TTG/220-110/Godenau/Trafo 211	D2GODE2*	D2GODE5*	220/110	Decommissioning

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
TTG	TTG/380-110/Hardegsen/Trafo 411	D2HARD1*	D2HARD5*	380/110	Commissioning
TTG	TTG/380-110/Hardegsen/Trafo 412	D2HARD1*	D2HARD5*	380/110	Commissioning
TTG	TTG/380-110/Hardegsen/Trafo 413	D2HARD1*	D2HARD5*	380/110	Commissioning
TTG	TTG/380-110/Lamspringe/Trafo 411	D2LAMS1*	D2LAMS5*	380/110	Commissioning
TTG	TTG/380-110/Lamspringe/Trafo 412	D2LAMS1*	D2LAMS5*	380/110	Commissioning
TTG	TTG/380-110/Alstedt/Trafo 411	D2ALFS1*	D2ALFS5*	380/110	Decommissioning
TTG	TTG/380-110/Alstedt/Trafo 412	D2ALFS1*	D2ALFS5*	380/110	Decommissioning
TTG	TTG/380-110/Alstedt/Trafo 411	D2ALFS1*	D2ALFS5*	380/110	Commissioning
TTG	TTG/380-110/Alstedt/Trafo 412	D2ALFS1*	D2ALFS5*	380/110	Commissioning
TTG	TTG/380-110/Alstedt/Trafo 413	D2ALFS1*	D2ALFS5*	380/110	Commissioning
TTG	TTG/380-220/Emden O/Trafo 428	D2EMOS1*	D2EMOS2*	380/220	Decommissioning

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
TTG	TTG/380-110/Emden O/Trafo 411	D2EMOS1*	D2EMOS5*	380/110	Commissioning
TTG	TTG/380-110/Emden O/Trafo 412	D2EMOS1*	D2EMOS5*	380/110	Commissioning
Amprion	TR 421	Hoheneck	Hoheneck	400/220	Decommissioning
Amprion	TR 421	Herbertingen	Herbertingen	400/220	Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/De commissioning
HOPS	WPP Brda	Konavoska Plat	220	WPP	
MEPSO	WPP Bogoslovec	Bogoslovec	110	WPP	
MEPSO	SPP Ovce Pole	Ovce Pole	110	SPP	
PSE	Rybnik gen.3	Wielopole	110	Thermal (coal)	Decommissioning
PSE	Rybnik gen.4	Wielopole	220	Thermal (coal)	Decommissioning
TTG	KKI 2 (Isar 2)	Isar	380	Nuclear	Decommissioning
TransnetBW	NPP Neckarwestheim 2	Neckarwestheim	380	nuclear	Decommissioning
National Grid ESO	Millbrook Power	Millbrook	400	OCGT	Commissioning
National Grid ESO	Conrad Energy	Yaxley	400	OCGT	Commissioning