

**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**

Final Draft | 15 July 2020

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All TSOs, taking into account the following,

WHEREAS

- (1) This document is a scenario definition for year 2021 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 2021 year scenarios

All TSO's agreed on the following reference timestamp to create scenarios for 2021:

- Winter Peak, based on the 3rd Wednesday of January year 2020, 15.01.2020 10:30 CET;
- Spring Peak, based on the 3rd Wednesday of April year 2019, 17.04.2019 10:30 CET;
- Summer Peak, based on the 3rd Wednesday of July year 2019, 17.07.2019 10:30 CET;
- Autumn Peak, based on the 3rd Wednesday of October year 2019, 16.10.2019 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 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 January 2021 to 31 March 2021. The reference timestamp to represent this scenario is the third Wednesday in January 2020 at 10:30hrs (15 January 2020). 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 behavior from 1 January 2021 to 31 March 2021. 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 April 2021 to 30 June 2021. The reference timestamp to represent this scenario is the third Wednesday in April 2019 at 10:30hrs (17 April 2019). 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 behavior from 1 April 2021 to 30 June 2021. 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 1 July 2021 to 30 September 2021. The reference timestamp to represent this scenario is the third Wednesday in July 2019 at 10:30hrs (17 July 2019). 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 behavior from 1 July 2021 to 30 September 2021. 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 October 2021 to 31 December 2021. The reference timestamp to represent this scenario is the third Wednesday in October 2019 at 10:30hrs (16 October 2019). 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 behavior from 1 October 2021 to 31 December 2021. 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.

Language

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

Appendix 1: Agreed net positions and DC link flows for the Winter peak scenario

Area Net Position

	Net Position (MW)
AL	-376
AT	-1948
BA	1098
BE	-788
BG	-13
CZ	972
DE-50HERTZ	8527
DE-AMPRION-SCHED	-757
DE-TENNET_DE	7744
DE-TRANSNETBW	-3210
DK1	3037
DK2	-164
EE	-494
ES	-84
FI	-1116
FR	7601
GB	-5203
GR	-528
HR	-922

HU	-2413
CH	-192
IT	-7096
LT	-1434
LU	-662
LV	162
ME	98
MK	-353
NL	-430
NO	1784
PL	-404
PT	-16
RO	-815
RS	-412
SE	-1330
SEM	203
SI	-454
SK	-173
TEIAS_AREA	362
UA-BEI	199

DC Interconnector Exchanges (in the indicated direction)

	Net Position (MW)
DE-50HERTZ > DK2	-496
SE > DE-TENNET_DE	425
DK1 > NL	693
NL > GB	1000
GR > IT	-359
GB > SEM	-125
LT > PL	-50
SE > LT	700
SEM > GB	78
NO > NL	-559
PL > SE	50
DK1 > DK2	600
DK1 > NO	1700
EE > FI	-1016
SE > FI	1024
DK1 > SE	554
BE > GB	1000
FR > GB	3000
DE-BE	0
DE-NO	0

Appendix 2: System changes for the Winter peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
APG	Villach	OVILLA21	220	Commissioning
Terna	S.Cristoforo	SCSM	220	Commissioning
NGESO	New Deer	NDER2	275	Commissioning
NGESO	Rothienorman	ROTH2	275	Commissioning
EMS	PRP Pancevo	JTPAN21	220	Commissioning
EMS	PRP Pancevo	JTPAN21	220	Commissioning
Swissgrid	Mapragg 11 kV	SMAPRA7	11	Commissioning
Swissgrid	Y/Wimmis 220 kV	SY_WIM2	220	Commissioning
Swissgrid	Pieterlen 220 kV	SPIETE2	220	Decommissioning
Swissgrid	Mapragg T4W Bus 11 kV	SMAPRT7	11	Commissioning
TEIAS	Kinik TM	TKINIT31	154	Commissioning
TEIAS	Golpazarı TM	TGLPZR31	154	Commissioning
TEIAS	Karakurt Havza TM	TKRKHV31	154	Commissioning
TEIAS	Gumusova TM	TGMSOV31	154	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
APG	Lienz - Rosegg	OLIENZ21	OROSEG21	220	Decommissioning
APG	Greuth - Feistriz	OGREUT21	OFEIST21	220	Decommissioning
APG	Lienz - Villach	OLIENZ21	OVILLA21	220	Commissioning
APG	Greuth - Villach	Ogreut21	OVILLA21	220	Commissioning
APG	Villach - Rosegg	OVILLA21	OROSEG21	220	Commissioning
APG	Villach - Feistriz	OVILLA21	OFEIST21	220	Commissioning
Fingrid	Petäjävesi Nuojua	- Petäjävesi	Nuojua	220	Decommissioning
IPTO		MEGALOPOLI	400kV line AXELOS-AGIOS NIKOLAOS	400	Commissioning
IPTO	1st phase of Crete island interconnection	MOLAI	CHANIA	150	Commissioning
IPTO	2nd phase of Cycladic islands interconnection	MYKONOS	NAXOS	150	Commissioning
IPTO	2nd phase of Cycladic islands interconnection	NAXOS	PAROS	150	Commissioning
IPTO	3rd phase of Cycladic islands interconnection	LAVRIO	SYROS	150	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
MAVIR SEPS	Gönyu Gabčíkovo	MGONYU11	QGABC_1	400	Commissioning
MAVIR SEPS	Gönyu – Veľký Ďur	MGONYU12	QVDUR_12	400	Commissioning
MAVIR-SEPS	Sajóivánka – Rimavská Sobota	MSAJI_11	QRSOB_1	400	Commissioning
Terna	L14	Ric.Ovest MI	Ric.Sud MI	220	Decommissioning
Terna	213	S.Cristoforo CP	Ric.Ovest MI	220	Commissioning
Terna	212	S.Cristoforo CP	Ric.Sud MI	220	Commissioning
PSE	2408	Radkowice	Kielce Piaski	220	Commissioning
NGESO	BLHI2-PEHE2	Blackhillock	Peterhead	275	Decommissioning
NGESO	KINT2-PEHE2	Kintore	Peterhead	275	Decommissioning
NGESO	FETT2-TEAL2	Fettereso	Tealing	275	Decommissioning
NGESO	KINC2-TEAL2	Kincardine	Tealing	275	Decommissioning
NGESO	BHIL2-ROTH2-1	Blackhillock	Rothienorman	275	Commissioning
NGESO	NDER2-ROTH2-2	New Deer	Rothienorman	275	Commissioning
NGESO	NDER2-ROTH2-1	New Deer	Rothienorman	275	Commissioning
NGESO	KINT2-NDER2-1	Kintore	New Deer	275	Commissioning
NGESO	FETT2-KINC2-2	Fettereso	Kincardine	275	Commissioning
EMS	HIP 2 - PRP Pancevo	JHIP 2	JTPAN21	220	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
EMS	PRP Pancevo - Rafinerija NIS	JTTPAN21	JRANIS21	220	Commissioning
EMS	HIP 2 - Rafinerija NIS	JHIP 2	JRANIS21	220	Decommissioning
EMS	TE Drmno - RP Drmno	JTDRM13	JRPDRM13	400	Commissioning
SEPS	V480	Velky Dur	Gabcikovo	400	Commissioning
Swissgrid	Auwiesen-Beznau Provisorium	SAUWIE2	SBEZNA2	220	Commissioning
Swissgrid	Batiaz-Y/Batiaz 4-Bein Provisorium	SBATIA1	SY_BAT1	380	Commissioning
Swissgrid	Chamoson-Y/Batiaz 4-Bein Provisorium	SCHAMO1	SY_BAT1	380	Commissioning
Swissgrid	Chippis-Wimmis	SCHIPP2	SWIMMI2	220	Commissioning
Swissgrid	Filisur-Sils Provisorium	SFILIS1	SSILS 1	380	Decommissioning
Swissgrid	Robbia-Y/La Punt Provisorium	SROBBI1	SY_PUN1	380	Decommissioning
Swissgrid	Auwiesen-Benken Provisorium	SAUWIE2	SBENKE2	220	Commissioning
Swissgrid	Bickigen-Y/Wimmis	SBICKI2	SY_WIM2	220	Commissioning
Swissgrid	Chamoson-Romanel Provisorium	SCHAMO1	SROMAN1	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Swissgrid	Chippis-Y/Wimmis	SCHIPP2	SY_WIM2	220	Commissioning
Swissgrid	Ilanz-Tavanasa Provisorium	SILANZ2	STAVAN2	220	Commissioning
Swissgrid	Pradella-Robbia Provisorium	SPRADE1	SROBBI1	380	Commissioning
Swissgrid	Robbia-Sils Provisorium	SROBBI1	SSILS 1	380	Commissioning
Swissgrid	Wimmis-Y/Wimmis	SWIMMI2	SY_WIM2	220	Commissioning
Swissgrid	Bassecourt-Pieterlen	SBASSE2	SPIETE2	220	Decommissioning
Swissgrid	Bickigen-Laufenburg Provisorium	SBICKI1	SLAUFER1	380	Decommissioning
Swissgrid	Muehleberg-Pieterlen	SMUEH32	SPIETE2	380	Decommissioning
Swissgrid	Chippis-Stalden 2 Provisorium Y/Visp 1	SCHIPP2	SSTALD2	220	Commissioning
TEIAS	Karakurt HES-Karakurt Havza	TKKURT31	TKRKHV31	154	Commissioning
TEIAS	Horasan-Karakurt Havza	THORAS31	TKRKHV31	154	Commissioning
TEIAS	Golpazarı-Pasalar	TGLPZR31	TPASAL31	154	Commissioning
TEIAS	Denizli Bati-Denizli 4	TDNZBA11	TDENZL11	400	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TEIAS	Bagyurdu-Kemal Pasa GIS	TBAGYR31	TKEMAL31	154	Commissioning
TEIAS	Polateli-Gaziantep2	TPOLAT11	TGANT211	400	Commissioning
TEIAS	Kulu-Emirler	TKULU_31	TEMIRL31	154	Commissioning
TEIAS	Klinik TM-Klinik RES	TKINIT31	TKINIK31	154	Commissioning
TEIAS	Cetin HES - Siirt TM	TCETİN11	TSIIRT11	400	Commissioning
TEIAS	Evrencik RES-Vize Havza	TEVRNC31	TVIZEH31	154	Commissioning
TEIAS	Güneyzinir HES- Mavi HES	TGUNEY31	TMAVI_31	154	Commissioning
TEIAS	Ürgüp - Derinkuyu	TURGUP31	TDKUYU31	154	Commissioning
TEIAS	Elmali-Fethiye	TELMAL31	TFETHI31	154	Commissioning
TEIAS	Semikler GIS - Ataer (Cable)	TSEMKG31	TATAER31	154	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
ELIA	PST Monceau	Chooz (FR)	Monceau (BE)	220/150	Commissioning
TTG	Schwandorf T413	D2SD 1*	D2SD 5*	380/110	Decommissioning
TTG	Schwandorf T412	D2SD 1*	D2SD 5*	380/110	Commissioning

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
MAVIR	Sajóivánka Tr. II.	MSAJI_11	MSAJI_41	400/120	Commissioning
Terna	CP S. Cristoforo			220/23	Commissioning
Terna	CP S. Cristoforo			220/23	Commissioning
Terna	CP S. Cristoforo			220/23	Commissioning
PSE	DUN-A3	Dunowo	Dunowo	400/110	Commissioning
PSE	WYS-A1	Wyszków	Wyszków	220/110	Commissioning
Swissgrid	Mapragg AT31.1	Trafo	SMAPRA7	SMAPRA7	11/11 Commissioning
Swissgrid	Mapragg AT31.2	Trafo	SMAPRA7	SMAPRA7	11/11 Commissioning
Swissgrid	Mapragg AT31.3	Trafo	SMAPRA7	SMAPRA7	11/11 Commissioning
Swissgrid	Mapragg Trafo AT31 c-k	SMAPRA1	SMAPRT7	380/11	Commissioning
Swissgrid	Bassecourt Trafo 32 (old transformer model)	SBASSE1	SBASSE1	380/220	Decommissioning
TEIAS	Inegol-2 TM	TINEGO31	TINEGO31	154/33	Commissioning
TEIAS	Bahcesehir TM	TBAHCS31	TBAHCS31	154/33	Commissioning
TEIAS	Dalaman TM	TDALAM31	TDALAM31	154/33	Commissioning
TEIAS	Merzifon TM	TMERZI31	TMERZI31	154/33	Commissioning
TEIAS	Reyhanli TM	TREYHA31	TREYHA31	154/33	Commissioning
TEIAS	Osmaniye TM	TOSMNY31	TOSMNY31	154/33	Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning / Decommissioning
Fingrid	Olkiluoto 3	Olkiluoto B	400	Nuclear	Commissioning
NGESO	Keadby-2	Keady	400	CCGT	Commissioning
TEIAS	Ilisu Hes	Ilisu TM	400	HPP	Commissioning
TEIAS	Asagi Kalekoy Hes	Asagi Kalekoy TM	400	HPP	Commissioning
TEIAS	Cetin Hes	Cetin TM	400	HPP	Commissioning
TEIAS	Esen2 Hes	Esen2 TM	154	HPP	Commissioning
TEIAS	Dereli Hes	Dereli TM	154	HPP	Commissioning

Appendix 3: Agreed net positions and DC link flows for the Spring peak scenario

Area Net Position

	Net Position (MW)
AL	-507
AT	-579
BA	213
BE	-1255
BG	815
CZ	2478
DE-50HERTZ	7022
DE-AMPRION-SCHED	-3030
DE-TENNET_DE	5000
DE-TRANSNETBW	-2900
DK1	288
DK2	-1172
EE	-185
ES	406
FI	-840
FR	4653
GB	-3123
GR	-884
HR	-710

	Net Position (MW)
HU	-2233
CH	1406
IT	-5500
LT	-1722
LU	-533
LV	272
ME	-50
MK	-265
NL	-762
NO	2595
PL	-200
PT	87
RO	-111
RS	10
SE	-39
SEM	277
SI	24
SK	350
TEIAS_AREA	424
UA-BEI	280

DC Interconnector Exchanges (in the indicated direction)

	Net Position (MW)
DE-50HERTZ > DK2	172
SE > DE-TENNET_DE	237
DK1 > NL	15
NL > GB	600
GR > IT	-99
GB > SEM	-197
LT > PL	-50
SE > LT	700
SEM > GB	80
NO > NL	189
PL > SE	50
DK1 > DK2	155
DK1 > NO	566
EE > FI	-885
SE > FI	1019
DK1 > SE	524
BE > GB	505
FR > GB	1741
DE-BE	0
DE-NO	0

Appendix 4: System changes for the Spring peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
TransnetBW	Großgartach C2	GR2GH	380	Commissioning
TTG	Stade West	D2STAW1*	380	Commissioning
TTG	Stade West	D2STAW2*	220	Commissioning
TTG	Götzdorf / DOW	D2GOEZ2*	220	Decommissioning
PSE	Reclaw	ZREC	220	Commissioning
TEIAS	Altinova TM	TALNOS31	154	Commissioning
TEIAS	Kose TM	TKOSE_11	400	Commissioning
TEIAS	Meydancik Havza TM	TMEYDN31	154	Commissioning
TEIAS	Duzce OSB TM	TDZCOS31	154	Commissioning
TEIAS	Giresun OSB TM	TGRSOS31	154	Commissioning
TEIAS	Narlidere GIS	TNARLD31	154	Commissioning
SVK	Norrtjärn	-	400	Commissioning
SVK	Ekudden	FT31	220	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	Saar Nord	Trier	Diefflen	220	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	Ensdorf Nord	Uchtelfangen	Pkt. Fraulautern	220	Decommissioning
Amprion	Rheinau West	Buerstadt	Pkt. Bürstadt	220	Decommissioning
Amprion	Rheinau West	Pkt. Wallstadt	Pfungstadt	220	Decommissioning
Amprion	Rheinau Ost	Pkt. Wallstadt	Pfungstadt	220	Decommissioning
Amprion	Diefflen Uchtelfangen	- Diefflen	Uchtelfangen	220	Commissioning
ESO	Maritza Iztok - Maritza Iztok 3 ck.2 (Mar Iztok- Mar Iztok 3_ck.2)	VMA_IZ11	VTMI3_11	400	Commissioning
ESO	Maritza Iztok - VMA_IZ11 Burgas (Maritza Iztok-Burgas)	VBURGA11	400	Commissioning	
Elering-AST	XSI_RI81	Kilingi-Nõmme	RigaTec2	330	Commissioning
TTG	Stade West Dollern Rot	D2STAW1*	D2STAW1*	380	Commissioning
TTG	Stade West Dollern Gelb	D2STAW1*	D2STAW1*	380	Commissioning
TTG	Dollern Götzdorf Blau	D2DOLL2*	D2GOEU2*	220	Decommissioning
TTG	Dollern Götzdorf Gruen	D2DOLL2*	D2GOEU2*	220	Decommissioning
TTG	Redwitz - Würgau 413/436 (temporary state)	D2RED 1*	D2WG 1*	380	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TTG	Redwitz - Remptendorf/50 HzT 413/436 (temporary state)	D2RED 1*	D8RE_1*	380	Decommissioning
TTG	Redwitz - Würgau 436 (back to normal state)	D2RED 1*	D2WG 1*	380	Commissioning
TTG	Redwitz - Remptendorf/50 HzT 413 (back to normal state)	D2RED 1*	D8RE_1*	380	Commissioning
TransnetBW	Kühmoos-Schwörstadt gn	Kühmoos	Schwörstadt	220	Commissioning
TransnetBW	Bannholz gn	Kühmoos	Schwörstadt	220	Decommissioning
TransnetBW	Großgartach-Pulverdingen rd	Großgartach	Pulverdingen	380	Decommissioning
TransnetBW	Großgartach-Pulverdingen rd	Großgartach C2	Pulverdingen	380	Commissioning
TransnetBW	Großgartach-Großgartach	Großgartach	Großgartach C2	380	Commissioning
PSE	4532	Glinki	Reclaw	220	Commissioning
NGESO	BHIL2-ROTH2-2	Blackhillock	Rothienorman	275	Commissioning
NGESO	KINT2-ROTH2-2	Kintore	Rothienorman	275	Commissioning
Swissgrid	Beznau-Eglisau Provisorium	SBEZNA2	SEGLIS2	220	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TEIAS	Yeni Havalimani GIS – Tasoluk (Cable)	TKHVLG31	TTASOL31	154	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	TR 211	Pfungstadt	Pfungstadt	220/110	Decommissioning
APG	Lienz RHU43	OLIENZ11	OLIENZ21	400/230	Commissioning
TTG	Stade West T421	D2STAW1*	D2STAW2*	380/220	Commissioning
TTG	Stade West T422	D2STAW1*	D2STAW2*	380/220	Commissioning
TTG	Dollern T421	D2DOLL1*	D2DOLL2*	380/220	Decommissioning
TTG	Dollern T422	D2DOLL1*	D2DOLL2*	380/220	Decommissioning
TTG	Pirach NK3	D2PI_2*	D2PI_5*	220/110	Decommissioning
TTG	Pirach T413	D2PI_2*	D2PI_5*	220/110	Commissioning
TransnetBW	T412	Großgartach	Großgartach	380/110	Decommissioning
TransnetBW	T412	Großgartach_C2	Großgartach	380/110	Commissioning
TransnetBW	T201	Schwörstadt	Schwörstadt	220/110	Decommissioning
TransnetBW	T211	Schwörstadt	Schwörstadt	220/110	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
PSE	REC-A1	Recław	Recław	220/110	Commissioning
PSE	REC-A2	Recław	Recław	220/110	Commissioning
TEIAS	Bahribaba GIS	TBAHRB31	TBAHRB31	154/33	Commissioning

Appendix 5: Agreed net positions and DC link flows for the Summer peak scenario

Area Net Position

	Net Position (MW)
AL	-156
AT	-1200
BA	792
BE	334
BG	985
CZ	2046
DE-50HERTZ	5664
DE-AMPRION-SCHED	0
DE-TENNET_DE	-4000
DE-TRANSNETBW	-1528
DK1	-1500
DK2	-1100
EE	-380
ES	406
FI	-1000
FR	6313
GB	-1562
GR	-939
HR	-950

HU	-1750
CH	4539
IT	-6000
LT	-1177
LU	-510
LV	-135
ME	-100
MK	-200
NL	-583
NO	2233
PL	-250
PT	87
RO	-561
RS	109
SE	1000
SEM	225
SI	150
SK	142
TEIAS_AREA	230
UA-BEI	326

DC Interconnector Exchanges (in the indicated direction)

	Net Position (MW)
DE-50HERTZ > DK2	480

SE > DE-TENNET_DE	-101
DK1 > NL	-700
NL > GB	255
GR > IT	-302
GB > SEM	-155
LT > PL	-50
SE > LT	668
SEM > GB	70
NO > NL	193
PL > SE	50
DK1 > DK2	418
DK1 > NO	-160
EE > FI	-974
SE > FI	1024
DK1 > SE	-187
BE > GB	144
FR > GB	938
DE-BE	0
DE-NO	0
NO-GB	0

Appendix 6: System changes for the Summer peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
50Hertz	Altdöbern	D8ADB 1*	380	Commissioning
Amprion	Herbertingen (Amprion)	TBD	380	Commissioning
TTG	Bergrheinfeld	D2BRF 1*	380	Decommissioning
TTG	Bergrheinfeld	D2BRF 2*	220	Decommissioning
TTG	Schweinfurt	D2SFT 2*	220	Decommissioning
TTG	Husum Nord	D2HUSN1*	380	Commissioning
TransnetBW	Obermooweiler	OMOWL	380	Commissioning
TransnetBW	Großgartach	GROGH	220	Decommissioning
TEIAS	Yozgat TM	TYOZGA11	400	Commissioning
TEIAS	Ferizli OSB TM	TFERIZ31	154	Commissioning
TEIAS	Alaplı Eregli OSB TM	TALAPL31	154	Commissioning
TEIAS	Iscehisar TM	TISCEH31	154	Commissioning
TEIAS	Yazihan Havza TM	TYAZIH31	154	Commissioning
TEIAS	Bartin OSB TM	TBRTOS11	400	Commissioning
SVK	Olingen	-	400	Commissioning
SVK	Torpberget	CT26	400	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	Weingarten	BASF W210	Maximiliansau	220	Decommissioning
Amprion	Bienwald West	Mutterstadt	Maximiliansau	220	Decommissioning
Amprion	Neurath 2b	Opladen	Y-Opladen	380	Decommissioning
Amprion	Maximiliansau Mutterstadt	- Maximiliansau	Mutterstadt	220	Commissioning
Amprion	BASF W210 Mutterstadt	- BASF W210	Mutterstadt	220	Commissioning
Amprion	Y-Opladen - Sankt Peter	Y-Opladen	Sankt Peter	380	Commissioning
Amprion	Sankt Peter Opladen	- Sankt Peter	Opladen	380	Commissioning
ESO	Varna - Burgas ck.2 (Varna-Burgas_ck.2)	VVARNA11	VBURGA11	400	Commissioning
TTG	Bergrheinfeld Grafenrheinfeld 485	- D2BRF 1*	D2GR 1*	380	Decommissioning
TTG	Bergrheinfeld Grafenrheinfeld 487	- D2BRF 1*	D2GR 1*	380	Decommissioning
TTG	Bergrheinfeld Schweinfurt 271	- D2BRF 2*	D2SFT 2*	220	Decommissioning
TTG	Bergrheinfeld Raitersaich 278	- D2BRF 2*	D2RAI 2*	220	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TTG	Bergrheinfeld West - Grafenrheinfeld 486	D2BRFW1*	D2GR 1*	380	Commissioning
TTG	Bergrheinfeld West - Grafenrheinfeld 487	D2BRFW1*	D2GR 1*	380	Commissioning
TTG	Husum Nord - Heide West Schwarz	D2HUSN1*	D2HEIW1*	380	Commissioning
TTG	Husum Nord - Heide West Weiss	D2HUSN1*	D2HEIW1*	380	Commissioning
TransnetBW	Dellmensingen-Obermooweiler gn	Dellmensingen	Obermooweiler	380	Commissioning
TransnetBW	Bürs-Obermooweiler wh	Bürs	Obermooweiler	380	Commissioning
TransnetBW	Grünkraut-Obermooweiler bl	Grünkraut	Obermooweiler	380	Commissioning
TransnetBW	Bürs-Obermooweiler bl	Bürs	Obermooweiler	380	Commissioning
TransnetBW	Bürs-Dellmensingen wh	Bürs	Dellmensingen	380	Decommissioning
TransnetBW	Bürs-Grünkraut bl	Bürs	Grünkraut	380	Decommissioning
TransnetBW	Herbertingen-Tiengen rd	Herbertingen	Tiengen	380	Decommissioning
TransnetBW	Herbertingen_Y-Herbertingen sw	Herbertingen	Y_Herbertingen	380	Decommissioning
TransnetBW	Herbertingen-Herbertingen ye	Herbertingen	Herbertingen	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TransnetBW	Herbertingen-Herbertingen rd	Herbertingen	Herbertingen	380	Commissioning
TransnetBW	Großgartach-Kupferzell wh	Großgartach	Kupferzell	380	Decommissioning
TransnetBW	Großgartach-Kupferzell wh	Großgartach_C2	Kupferzell	380	Commissioning
TransnetBW	Großgartach-Heilbronn rd	Großgartach	Heilbronn	380	Decommissioning
TransnetBW	Großgartach-Heilbronn rd	Großgartach_C2	Heilbronn	380	Commissioning
TransnetBW	Großgartach-Neurott sw	Großgartach	Neurott	220	Decommissioning
TransnetBW - Amprion	Metzingen Hoheneck	- Metzingen	Hoheneck	380	Commissioning
TransnetBW - Amprion	Herbertingen Herbertingen (Amprion) c1	- Herbertingen	Herbertingen (Amprion)	380	Commissioning
TransnetBW - Amprion	Herbertingen Herbertingen (Amprion) c2	- Herbertingen	Herbertingen (Amprion)	380	Commissioning
TransnetBW - Amprion	Herbertingen Hoheneck	- Herbertingen	Hoheneck	380	Decommissioning
NL	KIJ-OZN380 Z	Krimpen IJssel	a/d Oostzaan	380	Decommissioning
NL	KIJ-DIM380 Z	Krimpen IJssel	a/d Diemen	380	Commissioning
NL	OZN-DIM380 Z	Oostzaan	Diemen	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
PSE	H013	Mikułowa	Pasikurowice	400	Commissioning
PSE	217	Pałnów	Jasiniec	220	Decommissioning
PSE	430	Pałnów	Jasiniec	400	Commissioning
PSE	4032A	Plewińska	Konin	220	Decommissioning
PSE	H004	Kromolice	Pałnów	400	Commissioning
PSE	218	Piła Krzewina	Żydowo	220	Decommissioning
PSE	219	Piła Krzewina	Żydowo Kierzkowo	220	Commissioning
PSE	6601	Dunowo	Żydowo	220	Decommissioning
PSE	6301	Żydowo	Żydowo Kierzkowo	220	Decommissioning
PSE	6007	Dunowo	Żydowo Kierzkowo	400	Commissioning
NGESO	FETT2-KINC2-2	Fettereso	Kincardine	275	Decommissioning
NGESO	FETT-TEAL2	Fettereso	Tealing	275	Commissioning
NGESO	KINC2-TEAL2	Kincardine	Tealing	275	Commissioning
Swissgrid	220 kV Breite- Eglisau Provisorium	SBREIT2	SEGLIS2	220	Commissioning
TEIAS	Sagmalcilar Caglayan (Cable)	- TSAGMG11	TCAGLY11	400	Commissioning
TEIAS	Bahribaba - Hilal	TBAHRB31	THILAL31	154	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
TEL	Nadab – Oradea Sud	RNADA	RORAD4	400	Commissioning
SVK	Långbjörn - Storfinnforse	Nada b	IK35	CT90	400 Commissioning
Amprion Creos	- Bauler - Flebour	Bauler	Flebour	220	Commissioning
Amprion Creos	- Bauler - Roost	Bauler	Roost	220	Decommissioning
NGESO STATNETT	-	BLYTH	KVILLDDAL	400 / 420	Commissioning
RTE - Terna		Piossasco	Grand-Ile	400	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
50Hertz	Neuenhagen T412	D8NHG 1*	D8NHG 5*	380/110	Commissioning
Amprion	TR 214	Urberach	Urberach	220/115	Decommissioning
Amprion	TR 21	Maximiliansau	Maximiliansau	220/110	Decommissioning
Amprion	TR 413	Urberach	Urberach	400/120	Commissioning
Amprion	TR 412	Sankt Peter	Sankt Peter	400/120	Commissioning
ELIA	PST 2 Aubange	Moulaine (FR)	Aubange (BE)	220/220	Commissioning

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
Fingrid	Pyhänselkä T2	Pyhänselkä	Pyhänselkä	400/110	Commissioning
TTG	Bergrheinfeld VK5	D2BRF 1*	D2BRF 2*	380/220	Decommissioning
TTG	Bergrheinfeld VK7	D2BRF 1*	D2BRF 2*	380/220	Decommissioning
TTG	Bergrheinfeld NK2	D2BRF 1*	D2BRF 5*	380/110	Decommissioning
TTG	Bergrheinfeld West T411	D2BRFW1*	D2BRFW5*	380/110	Commissioning
TTG	Bergrheinfeld West T412	D2BRFW1*	D2BRFW5*	380/110	Commissioning
TTG	Schweinfurt NK1	D2SFT 2*	D2SFT 5*	220/110	Decommissioning
TTG	Husum Nord T411	D2HUSN1*	D2HUSN5*	380/110	Commissioning
TTG	Husum Nord T412	D2HUSN1*	D2HUSN5*	380/110	Commissioning
TTG	Husum Nord T413	D2HUSN1*	D2HUSN5*	380/110	Commissioning
TransnetBW	T323	Pulverdingen	Pulverdingen	380/220	Decommissioning
TransnetBW	T421	Pulverdingen	Pulverdingen	380/220	Commissioning
TransnetBW	T211	Großgartach	Großgartach	220/110	Decommissioning
TransnetBW	T411	Großgartach_C 2	Großgartach	380/110	Commissioning
PSE	PAT-A3	Pątnów	Pątnów	400/110	Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning / Decommissioning
PSE	Rybnik gen.1	Wielopole	110	Thermal (coal)	Decommissioning
PSE	Rybnik gen.2	Wielopole	110	Thermal (coal)	Decommissioning
EMS	HE Potpec G4	HE Potpec	110	HPP	Commissioning

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

Area Net Position

	Net Position (MW)
AL	-369
AT	-1079
BA	570
BE	142
BG	515
CZ	2379
DE-50HERTZ	5406
DE-AMPRION-SCHED	427
DE-TENNET_DE	-563
DE-TRANSNETBW	-1548
DK1	-926
DK2	-940
EE	-453
ES	406
FI	-1269
FR	6478
GB	-4151
GR	-660
HR	-797

HU	-1743
CH	606
IT	-6000
LT	-1059
LU	-583
LV	474
ME	-80
MK	-277
NL	918
NO	2132
PL	-258
PT	87
RO	-411
RS	107
SE	953
SEM	194
SI	564
SK	200
TEIAS_AREA	340
UA-BEI	268

DC Interconnector Exchanges (in the indicated direction)

	Net Position (MW)
DE-50HERTZ > DK2	549

SE > DE-TENNET_DE	77
DK1 > NL	-700
NL > GB	781
GR > IT	-306
GB > SEM	-125
LT > PL	-46
SE > LT	371
SEM > GB	69
NO > NL	522
PL > SE	-42
DK1 > DK2	361
DK1 > NO	-475
EE > FI	-621
SE > FI	1022
DK1 > SE	322
BE > GB	727
FR > GB	2449
DE-BE	0
DE-NO	0
NO-GB	0

Appendix 8: System changes for the Autumn peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
Amprion	Emscherbruch	TBD	380	Commissioning
Amprion	Duelken	TBD	380	Commissioning
Amprion	Hesseln	TBD	380	Commissioning
TTG	Mehrum Nord	D2MEHN1*	380	Commissioning
IPTO	EHV SS PTOLEMAIDA		400/150kV	Commissioning
Terna	Pantano D'Arci	PACP	380	Commissioning
Terna	Vizzini	VZIP	380	Commissioning
Terna	Paradiso 2 (Annunziata)	PA2P	380	Commissioning
Terna	Ciminna	CMRP	380	Commissioning
NGESO	Rothienorman	ROTH1	132	Commissioning
EMS	PRP Vladimirovac	JWALIB21	220	Commissioning
EMS	VE Pupin	JWPUPI21	220	Commissioning
EMS	VE Basaid	JWBASA51	110	Commissioning
EMS	VE Nikine Vode	JWNIKI51	110	Commissioning
EMS	PRP Vladimirovac	JWALIB21	220	Commissioning
EMS	TS Bistrica	JBISTR21	220	Commissioning
SEPS	Bystricany	QBYST_2	220	Decommissioning

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning / Decommissioning
TEIAS	Manavgat TM	TMANAV11	400	Commissioning
TEIAS	Denizli Bati TM	TDNZBA11	400	Commissioning
TEIAS	Polateli TM	TPOLAT11	400	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning	
Amprion	Westfalen West	Kusenhorst	Pkt. Wanne	380	Decommissioning	
Amprion	Westfalen West	Huellen	Pkt. Wanne	380	Decommissioning	
Amprion	Recklinghausen	Mengede	Kusenhorst	380	Decommissioning	
Amprion	Westfalen West	Pkt. Wanne	Mengede	380	Decommissioning	
Amprion	Utfort West	Duelken	Pkt. St. Tönis	220	Decommissioning	
Amprion	Fichtenhain Ost	Duelken	Osterath	220	Decommissioning	
Amprion	Kusenhorst Emscherbruch 1	-	Kusenhorst	Emscherbruch	380	Commissioning
Amprion	Kusenhorst Emscherbruch 2	-	Kusenhorst	Emscherbruch	380	Commissioning
Amprion	Emscherbruch Huellen	-	Emscherbruch	Huellen	380	Commissioning
Amprion	Emscherbruch Mengede 1	-	Emscherbruch	Mengede	380	Commissioning
Amprion	Emscherbruch Mengede 2	-	Emscherbruch	Mengede	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
Amprion	Duelken - Osterath 1	Duelken	Osterath	380	Commissioning
Amprion	Duelken - Osterath 2	Duelken	Osterath	380	Commissioning
Amprion	Hesseln Guetersloh	- Hesseln	Guetersloh	220	Commissioning
Amprion	Pkt. Hesseln Süd - Hesseln	Pkt. Süd	Hesseln	380	Commissioning
Amprion	Pkt. Hesseln Süd - Guetersloh	Pkt. Süd	Guetersloh	380	Commissioning
Terna	371	Paternò	Pantano D'Arci	380	Commissioning
Terna	372	Priolo	Pantano D'Arci	380	Commissioning
Terna	373	Chiaramonte Gulfi	Vizzini	380	Commissioning
Terna	339	Paternò	Vizzini	380	Commissioning
Terna	374	Chiaramonte Gulfi	Ciminna	380	Commissioning
PSE	4531	Morzyczyn	Reclaw	220	Commissioning
PSE	1012	Mory	Ołtarzew	220	Decommissioning
PSE	1014	Ołtarzew	Warszawa Towarowa	220	Commissioning
EMS	VE Pupin - PRP Kovacica	JWPUPI21	JWKova21	220	Commissioning
EMS	VE Basaid - TS Nova Crnja	JWBASA51	JNCRNJ5	110	Commissioning

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning	
EMS	VE Nikine Vode - HE Djerdap 2	JWNIKI51	JHDE25	110	Commissioning	
EMS	TS Mosna - VE Nikine Vode	JMOSNA51	JWNIKI51	110	Commissioning	
EMS	TS Pancevo 2 - PRP Vladimirovac	JPANC22	JWALIB21	220	Commissioning	
EMS	PRP Vladimirovac - PRP Kovacica	JWALIB21	JWKova21	220	Commissioning	
EMS	TS Pancevo 2 - PRP Kovacica	JPANC22	JWKova21	220	Decommissioning	
EMS	Novi Sad 3 - Srbobran	JNSAD312	JSRBOB11	400	Commissioning	
EMS	Srbobran Subotica	-	JSRBOB11	JSUBO311	400	Commissioning
EMS	Novi Sad 3 Subotica	-	JNSAD312	JSUBO311	400	Decommissioning
EMS	Kragujevac 2 - Kraljevo 3	JKRAG211	JKRAL311	400	Commissioning	
EMS	Pozega - Bistrica	JPOZEG21	JBISTR21	220	Commissioning	
SEPS	V274 Krizovany - Bystricany	Krizovany	Bystricany	220	Decommissioning	
SVK	-	RT17	BT34	220	Decommissioning	
SVK	Lindbacka - Östansjö	RT16	FT312	400	Commissioning	
CGES / EMS		OTPLJE21	JBISTR21	220	Commissioning	

TSO	Name	From	To	U [kV]	Commissioning / Decommissioning
CGES / EMS		OTPLJE21	JPOZEG21	220	Decommissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning	
Fingrid	Isoniemi PM2	Isoniemi kV *	220	Isoniemi 110 kV	220	Commissioning
50Hertz	Güstrow T412	D8GUE 1	D8GUE 5*	380/110	Commissioning	
Amprion	TR 212	Duelken	Duelken	220/115	Decommissioning	
Amprion	TR 211	Duelken	Duelken	220/115	Decommissioning	
Amprion	TR 411	Duelken	Duelken	400/120	Commissioning	
Amprion	TR 412	Duelken	Duelken	400/120	Commissioning	
Amprion	TR 211	Guetersloh	Guetersloh	230/120	Commissioning	
Amprion	TR 411	Hesseln	Hesseln	400/120	Commissioning	
TTG	Mehrum Nord T421	D2MEHN1*	D2MEHR2*	380/220	Commissioning	
TTG	Mehrum Nord T422	D2MEHN1*	D2MEHR2*	380/220	Commissioning	
TTG	Mechlenreuth T412	D2MH 1*	D2MH 2*	380/110	Commissioning	
TTG	Oberbachern NK2	D2OBA 1*	D2OBA 5*	380/110	Decommissioning	
TTG	Oberbachern T411	D2OBA 1*	D2OBA 5*	380/110	Commissioning	
Terna	Pianezza			220	Commissioning	

TSO	Name	From	To	U [kV/kV]	Commissioning / Decommissioning
Terna	Larino			380	Commissioning
Terna	Matera			380/150	Commissioning
Terna	Partinico			220/150	Commissioning
Terna	Ragusa			220/150	Commissioning
NGESO	SGT3	ROTH2	ROTH1	275/132	Commissioning
NGESO	SGT4	ROTH2	ROTH1	275/132	Commissioning
NGESO	SGT1	TAUT4	TAUT1	400/132	Commissioning
EMS	Srbobran 400_115	T1 JSRBOB11	JSRBOB51	400/115	Commissioning
EMS	Srbobran 400_115	T2 JSRBOB11	JSRBOB52	400/115	Commissioning
EMS	Kraljevo 400_115	3 T1 JKRAL311	JKRAL351	400/115	Commissioning
EMS	Bistrica T1 220_115	JBISTR21	JBISTR51	220/115	Commissioning
SEPS	T201BYST	Bystricany	Bystricany	220/110	Decommissioning
SEPS	T402BYST	Bystricany	Bystricany	400/110	Commissioning

Generation units

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/De commissioning
IPTO	PTOLEMAIDA 5	EHV S/S PTOLEMAIDA		Lignite	Commissioning
Terna	FOGN	Foggia	380	ICS	Commissioning

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/De commissioning
Terna	GASN	Garigliano	380	ICS	Commissioning
Terna	MDAN	Maida	380	ICS	Commissioning
Terna	BRIN	Brindisi Pignicelle	380	ICS	Commissioning
Terna	CANR	Candia	380	ICS	Commissioning
Terna	FNOR	Fano	380	ICS	Commissioning
Terna	VLVR	Villavalle	380	ICS	Commissioning
Terna	VLLR	Villanova	380	ICS	Commissioning
EMS	TETO Pancevo	PRP Pancevo	400	CHP	Commissioning
EMS	TE Kostolac B G3	TE Kostolac B	400	TPP	Commissioning
EMS	VE Nikine Vode	PRP Nikine Vode	110	WPP	Commissioning
EMS	VE Pupin	PRP Kovacica	220	WPP	Commissioning
EMS	VE Basaid	TS Nova Crnja	110	WPP	Commissioning
EMS	VE Alibunar 1&2	PRP Vladimirovac	220	WPP	Commissioning
TTG	Brokdorf	D2BDOR1*	380	nuclear	Decommissioning
TTG	Grohnde	D2GROH1*	380	nuclear	Decommissioning
HOPS	VE Konavoska brda	Plat	220	WPP	Commissioning
HOPS	VE Bruvno	Mazin	220	WPP	Commissioning