
All TSOs' scenario definition and scenario description for the year 2019 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).

Date 16 July 2018

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All TSOs, taking into account the following,

Whereas

- (1) This document is a scenario definition for year 2019 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.

1. Common list of 2019 year scenarios

All TSO's agreed on the following reference timestamp to create scenarios for 2019:

- Winter Peak, based on the 3rd Wednesday of January year 2018, 10:30 CET;
- Summer Peak, based on the 3rd Wednesday of July year 2017, 10:30 CET;
- Spring Valley, based on the 3rd Wednesday of April year 2017 03:30 CET;
- Autumn Valley, based on the 3rd Wednesday of October year 2017, 03:30 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 scenario period are included in the scenarios.

2. 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 2019 to 31 March 2019. The reference timestamp to represent this scenario is 3rd Wednesday 10:30 in January 2018 (17 January 2018). It is the most probable representation of 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 spreadsheets 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 2019 to 31 March 2019 and consecutive scenarios. The changes identified will be at a level of substation, branch, generation or other significant plant change which is likely to influence system loading or cross border flows. These changes will be listed in the scenario outline spreadsheets for each synchronous area presented in Appendix 2.

Any major system outage(s), which will last for the entire considered 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 constellations,
- etc.

3. 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 July to 30st September 2019. The reference timestamp to represent this scenario is 3rd Wednesday 10:30 in July 2017 (19 July 2017). 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 spreadsheets 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 July 2019 to 30 September 2019 and consecutive scenarios. The changes identified will be at a level of substation, branch, generation or other significant plant change which is likely to influence system loading or cross border flows. These changes will be listed in the scenario outline spreadsheets for each synchronous area presented in Appendix 4.

Any major system outage(s), which will last for the entire considered 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 constellations,
- etc.

4. Spring valley scenario

The spring valley 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 to 30 June 2019. The reference timestamp to represent this scenario is 3rd Wednesday 03:30 in April 2017 (19 April 2017). It is the most probable representation of spring valley 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 valley-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 spreadsheets 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 April 2019 to 30 June 2019 and consecutive scenarios. The changes identified will be at a level of substation, branch, generation or other significant plant change which is likely to influence system loading or cross border flows. These changes will be listed in the scenario outline spreadsheets for each synchronous area presented in Appendix 6.

Any major system outage(s), which will last for the entire considered 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 constellations,
- etc.

5. Autumn valley scenario

The autumn valley 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 to 31 December 2019. The reference timestamp to represent this scenario is 3rd Wednesday 03:30 in October 2017 (18 October 2017). It is the most probable representation of autumn valley 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 valley-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 spreadsheets 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 to 31 December 2019 and consecutive scenarios. The changes identified will be at a level of substation, branch, generation or other significant plant change which is likely to influence system loading or cross border flows. These changes will be listed in the scenario outline spreadsheets for each synchronous area presented in Appendix 8.

Any major system outage(s), which will last for the entire considered 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 constellations,
- etc.

6. 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

RG CE

	to	DKe	GB	SE	NO	LT	Net Positions
from	AL						128
	AT						-61
	BA						687
	BE		-1000				-2360
	BG						-158
	CH						-895
	RS						195
	ME						366
	CZ						357
	DE	-583		-233			6698
	DK _w	590		542	-1532		-653
	MA						-855
	ES						-2062
	FR		1500				9972
	GR						-1395
	HR						-309
	HU						-2035
	IT						-6822
	KS						0
	LU						-632
	MK						-376
	NL		1000		-700		-615
	PL			0		0	0
	PT						317
	RO						-300
	SI						-101
	SK						-389
	UA						450
	TR						432
	IE		-50				-50

RG Baltic

	to	PL	SE	FI	Net Positions
from	EE			-412	406
	LV				129
	LT	0	-1		-1205

RG Nordic

	to	DKw	DE	EE	LT	NL	PL	RU	Net Positions
from	DKe	-590	583						671
	FI			412				71	2832
	NO	1532				700		0	917
	SE	-542	233		-1		0		-2022

Appendix 2: System changes for the winter peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning/Decommissioning
Energinet	Bjæverskov	BJS	220	Commissioning
Energinet	Ishøj	ISH	220	Commissioning
Energinet	Kriegers Flak A	KFA	220	Commissioning
Energinet	Kriegers Flak B	KFB	220	Commissioning
Energinet	Kriegers Flak E	KFE	220	Commissioning
Energinet	Kriegers Flak E	KFE	150	Commissioning
CGES	Lastva	0LASTV11	400/110	Commissioning
50Hertz	Arkonabecken/ Süd	ABS	220	Commissioning
TTG	Pleinting (new)	PT	220	Commissioning
TTG	Mechlenreuth (new)	MH	380	Commissioning
TTG	Mechlenreuth (old)	MH	380	Decommissioning
Amprion	Oechtel	D7OECH1*	380	Commissioning
Amprion	Y-Oechtel	D7YOEC11	380	Commissioning
Fingrid	Olkiluoto A	OL A	400	Decommissioning
Fingrid	Olkiluoto B	OL B	400	Commissioning
Fingrid	Olkiluoto D	OL D	400	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning/Decommissioning
Energinet	Cobra	Endrup	Eemshaven	HVDC	Commissioning
Energinet	BJS - ISH	BJS	ISH	220	Commissioning
Energinet	BJS - KFA	BJS	KFA	220	Commissioning
Energinet	BJS - KFB	BJS	KFB	220	Commissioning
Energinet	KFA - KFB	KFA	KFB	220	Commissioning
Energinet	KFB - KFE	KFB	KFE	220	Commissioning
Energinet	KFE - "50HZ"	KFE	"50Hz"	150	Commissioning
PSE	425	Kozienice	Stanisławów	400	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning/Decommissioning
PSE	E012	Narew	Stanisławów	400	Decommissioning
PSE	E204	Siedlce Ujrzanów	Stanisławów	400	Decommissioning
PSE	420	Kozienice	Siedlce Ujrzanów	400	Commissioning
PSE	E013	Narew	Siedlce Ujrzanów	400	Commissioning
PSE	E206	Siedlce Ujrzanów	Stanisławów	400	Commissioning
PSE	1012	Mory	Ołtarzew	220	Decommissioning
PSE	1014	Ołtarzew	Warszawa Towarowa	220	Commissioning
TenneT NL	Cobra	Eemshaven	Endrup	HVD C	Commissioning
ELIA	380.73 Merca - Horta	MERCATOR	HORTA	380	Commissioning
ELIA	HVDC NEMO	GEZELLE	National Grid	HVD C	Commissioning
CGES		Lastva	Cevo	400	Commissioning
CGES		Lastva	Cevo	400	Commissioning
50Hertz	KFE - BAZ	KFE	Baltic2	150	Commissioning
50Hertz	331-321	Wolmirstedt	Güstrow	220	Decommissioning
50Hertz	332-322	Wolmirstedt	Parchim/ Süd	220	Decommissioning
50Hertz	328	Güstrow	Parchim/ Süd	220	Commissioning
50Hertz	531	Ragow	Förderstedt	380	Decommissioning
50Hertz	531	Ragow	Jessen/Nord	380	Commissioning
50Hertz	533	Jessen/Nord	Förderstedt	380	Commissioning
50Hertz	501-561	Schönewalde	Streumen	380	Decommissioning
50Hertz	501	Ragow	Schönewalde	380	Commissioning
50Hertz	561	Ragow	Streumen	380	Commissioning
50Hertz	261	Lubmin	Arkonabecken / Süd	220	Commissioning
TTG	437	Redwitz	Mechlenreuth	380	Decommissioning
TTG	437	Mechlenreuth	Etzenricht	380	Decommissioning
TTG	469	Redwitz	Mechlenreuth	380	Commissioning
TTG	437	Mechlenreuth	Etzenricht	380	Commissioning
Amprion	Hanekenfaehr Oechtel Roxel	Hanekenfäh	Y-Oechtel	380	Commissioning
Amprion	Hanekenfaehr Oechtel Roxel	Y-Oechtel	Oechtel	380	Commissioning
Amprion	Hanekenfaehr Oechtel Roxel	Y-Oechtel	Roxel	380	Commissioning
Amprion	Roxel Ost	Hanekenfaehr	Roxel	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning/Decommissioning
EMS	Kosovo B	EMS	OST	400	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning/Decommissioning
Energinet		ISH	ISH	400/220	Commissioning
Energinet		BJS	BJS	400/220	Commissioning
Energinet		BJS	BJS	220/220	Commissioning
Energinet		KFE	KFE	220/150	Commissioning
PSE	WTO-A2	Warszawa Towarowa	Warszawa Towarowa	220/110	Commissioning
UKRENERGO	AT-4	Mukachevo	Mukachevo	400/220	Commissioning
CGES		Lastva	Lastva	400/110	Commissioning
50Hertz	Back to Back	Bentwisch	Bentwisch	150/400	Commissioning
50Hertz	411	Lubmin	Lubmin	400/110	Commissioning
TTG	NK2 282	Pleinting	Pleinting	220/110	Decommissioning
TTG	DK9	Mechlenreuth	Mechlenreuth	400/110	Decommissioning
TTG	T211	Oberbrunn	Oberbrunn	220/110	Commissioning
TTG	T213	Hardeggen	Hardeggen	220(380)/110	Commissioning
TTG	T214	Hardeggen	Hardeggen	220(380)/110	Commissioning

Generation units:

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
PSE	Bełchatów gen. 1	Rogowiec	220	Thermal (lignite)	Decommissioning
PSE	Bełchatów gen. 2	Rogowiec	220	Thermal (lignite)	Decommissioning
PSE	Łagisza gen. 6	Łagisza	220	Thermal (coal)	Decommissioning
PSE	Łagisza gen. 7	Łagisza	220	Thermal (coal)	Decommissioning
SEPS	PPC Malzenice	Krizovany	400	Thermal (gas)	Commissioning
50Hertz	CWA	Arkonabecken / Süd	220	Windfarm offshore	Commissioning
50Hertz	Jaenschwalde F	Preilack	380	Thermal (lignite)	Decommissioning

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
EMS	Cibuk	Cibuk	400	Wind farm	Commissioning
Fingrid	Olkiluoto 3	Olkiluoto D	400	Nuclear	Commissioning

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

RG CE

	to	DKe	GB	SE	NO	LT	Net Positions
from	AL						-632
	AT						-739
	BA						287
	BE		1000				1330
	BG						821
	CH						2339
	RS						-122
	ME						-139
	CZ						368
	DE	-177		-465			5345
	DKw	-134		-680	-851		-1680
	MA						-885
	ES						-1457
	FR		1500				2626
	GR						-183
	HR						-1407
	HU						-1937
	IT						-4895
	KS						0
	LU						-579
	MK						-83
	NL		1000		-700		-211
	PL			0		0	4
	PT						842
	RO						-81
	SI						292
	SK						469
	UA						494
	TR						306
	IE		-50				-50

RG Baltic

	to	PL	SE	FI	Net Positions
from	EE			-394	100
	LV				-68
	LT	0	-372		-1619

RG Nordic

	to	DKw	DE	EE	LT	NL	PL	RU	Net Positions
from	DKe	134	177						1533
	FI			394				66	3156
	NO	851				700		0	-294
	SE	680	465		372		0		-556

Appendix 4: System changes for the summer peak scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning/Decommissioning
National Grid	Chilling	CHIL4	400	Commissioning
TTG	Pleinting	PT	220	Decommissioning
TTG	Elsfleth	ELSE		Commissioning
TTG	Pleinting (old)	PT	220	Decommissioning
TTG	Elsfleth/West	ELSE	380	Commissioning
Amprion	Bacharach	D7BACH1*	380	Commissioning
Terna	Piossasco		320/380 (DC/AC)	
SVK	Grönviken	-	420	Commissioning
SVK	Barsebäck	FT76	420	Commissioning
SVK	Skogsäter	-	420	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning/Decommissioning
MAVIR	Szabolcsbáka - Zahidnoukrainska	Szabolcsbáka	Zahidnoukrainska	750	Commissioning
MAVIR	Albertirsa - Zahidnoukrainska	Albertirsa	Zahidnoukrainska	750	Decommissioning
ELIA	380.74 Merca - Horta (Roden)	MERCATOR	HORTA	380	Commissioning
RTE	Charpenay-Pivoz	Charpenay	Pivoz	400	Decommissioning
RTE	Charpenay-Echallas 1	Charpenay	Echallas	400	Commissioning
RTE	Pivoz-Echallas 1	Pivoz	Echallas	400	Commissioning
National Grid	CHIL4-FAWL4	Chilling	Fawley	400	Commissioning
National Grid	CHIL4-LOVE4	Chilling	Lovedean	400	Commissioning
TTG		Dollern	Hamburg Nord (50HzT)	380	Commissioning
TTG		Kummerfeld	Hamburg Nord (50HzT)	380	Decommissioning
TTG		Kummerfeld	Dollern	380	Commissioning
TTG	1	Grohnde	Bergshausen	380	Decommissioning
TTG	1	Grohnde	Wuergassen	380	Commissioning
TTG	1	Wuergassen	Bergshausen	380	Commissioning
Amprion	Duemmersee Süd 1	Wehrendorf	Ohlensehlen	380	Decommissioning
Amprion	Diepholz Ost	St.Huelfe	Wehrendorf	380	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning/Decommissioning
Amprion	St.Huelfe Wehrendorf Ohlensehlen	St.Huelfe	Y-St.Huelfe	380	Commissioning
Amprion	St.Huelfe Wehrendorf Ohlensehlen	Y-St.Huelfe	Ohlensehlen	380	Commissioning
Amprion	St.Huelfe Wehrendorf Ohlensehlen	Y-St.Huelfe	Wehrendorf	380	Commissioning
Amprion	Soonwald West	Weissenthurm	Waldlaubersheim	380	Decommissioning
Amprion	Weissenthurm Bacharach	Weissenthurm	Bacharach	380	Commissioning
Amprion	Bacharach Waldlaubersheim	Bacharach	Waldlaubersheim	380	Commissioning
Terna	Grande Ile- Piosasco			320 [HVD C]	Commissioning
Terna	Lacchiarella- Chignolo Po			380	Commissioning
Terna	Vignole-Vado			380	Commissioning
Terna	Italia-Montenegro			500 [HVD C]	Commissioning
Terna	Foggia-Benevento			380	Commissioning
Statnett	Saurdal-Ertsmyra #2	Saurdal	Ertsmyra	420	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Commissioning/Decommissioning
MAVIR	Szabolcsbáka tr. No. I	Szabolcsbáka	Szabolcsbáka	750/400 kV	Commissioning
MAVIR	Albertirsa tr. No. II	Albertirsa	Albertirsa	750/400 kV	Decommissioning
UKRENERGO	AT-4	Mukachevo	Mukachevo	400/220	Commissioning
50Hertz	413	Wessin	Wessin	400/110kV	Commissioning
TTG	T421	Pleinting	Pleinting	400/220	Decommissioning
TTG	EMOS T428	Emden/Ost	Emden/Ost	400/220	Commissioning
Terna	Grossotto			220/132	Commissioning
Terna	Cardano			220/132	Commissioning

Appendix 5: Agreed net positions and DC link flows for the spring valley scenario

RG CE

	to	DKe	GB	SE	NO	LT	Net Positions
from	AL						-100
	AT						267
	BA						167
	BE		1000				-1650
	BG						600
	CH						-1463
	RS						-975
	ME						229
	CZ						1656
	DE	555		0			4742
	DKw	-65		-576	-1006		-632
	MA						-789
	ES						429
	FR		1500				7248
	GR						-696
	HR						-475
	HU						-944
	IT						-6251
	KS						0
	LU						-406
	MK						-220
	NL		900		-700		723
	PL			0		0	400
	PT						-1028
	RO						300
	SI						-218
	SK						304
	UA						590
	TR						-200
	IE		200				200

RG Baltic

	to	PL	SE	FI	Net Positions
from	EE			89	295
	LV				68
	LT	0	-205		-954

RG Nordic

	to	DKw	DE	EE	LT	NL	PL	RU	Net Positions
from	DKe	65	-555						-564
	FI			-89				944	1544
	NO	1006				700		28	907
	SE	576	0		205		0		993

Appendix 6: System changes for the spring valley scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning/ Decommissioning
PSE	Jasiniec	ZJAS5411	380(/220/110)	Commissioning
PSE	Skawina	ZSKA3411	380(/220/110)	Commissioning
PSE	Pelplin	ZPLP5221	220(/110)	Decommissioning
PSE	Pelplin	ZPLP5411	380(/110)	Commissioning
MAVIR	Szabolcsbáka	N/A	750/380	Commissioning
RTE	Avant-Amonts	N/A	225	Commissioning
RTE	Voie Sacrée	N/A	225	Commissioning
RTE	Nègrepelisse	N/A	225	Commissioning
CGES	Lastva	OLASTV11	380/110	Commissioning
TTG	Pleinting (old)	PT	220	Decommissioning
TTG	Mechlenreuth (new)	MH	380	Commissioning
TTG	Oberbrunn (old)	OBR	220	Decommissioning
TTG	Oberbrunn (new)	OBR	220	Commissioning
TTG	Handewitt	HAND	380	Commissioning
SVK	Midskog	IK2	420	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning/ Decommissioning
CEPS	V413	Řeporyje	Prosenice	380	Decommissioning
CEPS	V413	Řeporyje	Mírovka	380	Commissioning
CEPS	V416	Mírovka	Prosenice	380	Commissioning
TransnetBW	Dellmensingen-Obermooweiler green	Dellmensingen	Obermooweiler	380	Decommissioning
TransnetBW	Grünkraut-Obermooweiler blue	Grünkraut	Obermooweiler	380	Decommissioning
TransnetBW	Bürs-Obermooweiler white	Bürs	Obermooweiler	380	Decommissioning
TransnetBW	Bürs-Obermooweiler blue	Bürs	Obermooweiler	380	Decommissioning
TransnetBW	Bürs-Dellmensingen green/white	Bürs	Dellmensingen	380	Commissioning
TransnetBW	Bürs-Grünkraut blue	Bürs	Grünkraut	380	Commissioning
PSE	216	Jasiniec	Pałnów	220	Decommissioning
PSE	429	Jasiniec	Pałnów	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning/Decommissioning
PSE	217	Jasiniec	Pątnów	220	Decommissioning
PSE	430	Jasiniec	Pątnów	380	Commissioning
PSE	N005	Jasiniec	Grudzień	380	Commissioning
PSE	4032C	XPD	Konin	220	Decommissioning
PSE	H004	Pątnów	Plewiska	380	Commissioning
PSE	H014	Pątnów	Plewiska	380	Commissioning
PSE	G009	Byczyna	Tarnów	380	Decommissioning
PSE	G008	Skawina	Tarnów	380	Commissioning
PSE	G006	Byczyna	Skawina	380	Commissioning
PSE	410	Rzeszów	Tuczna	380	Decommissioning
PSE	421	Rzeszów	Skawina	380	Commissioning
PSE	G007	Skawina	Tuczna	380	Commissioning
PSE	6005	Jasiniec	Pelplin	220	Decommissioning
PSE	N007	Grudzień	Pelplin	380	Commissioning
PSE	N008	Grudzień	Pelplin	380	Commissioning
PSE	6401	Gdańsk	Pelplin	220	Decommissioning
PSE	N407	Gdańsk Przyjaźń	Pelplin	380	Commissioning
PSE	N408	Gdańsk Przyjaźń	Pelplin	380	Commissioning
PSE	N010	Gdańsk Przyjaźń	Żydowo Kierzkowo	380	Commissioning
MAVIR	Sajószöged - Szabolcsbáka	Sajószöged	Szabolcsbáka	380	Commissioning
MAVIR	Szabolcsbáka - Mukachevo	Szabolcsbáka	Mukachevo	380	Commissioning
MAVIR	Sajószöged - Mukachevo	Sajószöged	Mukachevo	380	Decommissioning
RTE	Montpezat-Pratclaux	Montpezat	Pratclaux	220	Decommissioning
RTE	Montgros-Montpezat	Montgros	Montpezat	220	Commissioning
RTE	Montgros-Pratclaux	Montgros	Pratclaux	220	Commissioning
RTE	Montahut - Saint Vincent	Montahut	Saint-Vincent	220	Decommissioning
RTE	Montahut - Saint Vincent - Avants Monts	Montahut	Saint-Vincent	220	Commissioning
RTE	Trois Domaines - Vandières	Trois Domaines	Vandières	220	Decommissioning
RTE	Trois Domaines - Vandières - Voie Sacrée	Trois Domaines	Vandières	220	Commissioning
RTE	Godin - Verlhaguet	Godin	Verlhaguet	220	Decommissioning

TSO	Name	From	To	U [kV]	Commissioning/Decommissioning
RTE	Godin - Verlhaguet - Nègrepelisse	Godin	Verlhaguet	220	Commissioning
CGES		Lastva	Cevo	380	Commissioning
CGES		Lastva	Cevo	380	Commissioning
50Hertz	487	Stendal/West	Wolmirstedt	380	Commissioning
50Hertz	488	Stendal/West	Wolmirstedt	380	Commissioning
National Grid	FAWL4-BOTW4	Fawley	Botley Wood	380	Decommissioning
Amprion	Brauweiler West	Rommerskirchen	Knapsack	380	Decommissioning
Amprion	Rommerskirchen Brauweiler	Rommerskirchen	Brauweiler	380	Commissioning
Amprion	Brauweiler Knapsack	Brauweiler	Knapsack	380	Commissioning
Statnett	Honna-Arendal	Honna	Arendal	420	Commissioning
Statnett	Fjotland + Honna-Fjotland	Honna	Fjotland	420	Commissioning
Statnett	Solholm-Fjotland	Solholm	Fjotland	420	Commissioning
Statnett	Ertsmyra-Fjotland	Ertsmyra	Fjotland	420	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Max angle	Commissioning/Decommissioning
PSE	JAS-A2	Jasiniec	Jasiniec	220/110	-	Decommissioning
PSE	JAS-A3	Jasiniec	Jasiniec	380/110	-	Commissioning
PSE	SKA-A3	Skawina	Skawina	380/110	-	Commissioning
PSE	PLP-A2	Pelplin	Pelplin	380/110	-	Commissioning
UKRENERGO	AT-4	Mukachevo	Mukachevo	380/220	-	Commissioning
CGES		Lastva	Lastva	380/110	-	Commissioning
TTG	T411	Mechlenreuth	Mechlenreuth	380/110	-	Commissioning
TTG	NK2	Oberbrunn	Oberbrunn	220/110	-	Decommissioning
Amprion	TR421	Brauweiler	Brauweiler	220/400	-	Commissioning
Statnett	T3 Fjotland	Fjotland	Fjotland	420/300	-	Commissioning

Generation units:

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
PSE	Opole gen. 5	Dobrzeń	380	Thermal (coal)	Commissioning
SEPS	Mochovce 3	Velky Dur	380	Nuclear	Commissioning

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/ Decommissioning
TTG	Gemeinschaftskraftwerk Kiel	Kiel	220	coal	Decommissioning
TTG	Küstenkraftwerk Kiel	Kiel	110, 220	gas	Commissioning

Appendix 7: Agreed net positions and DC link flows for the autumn valley scenario

RG CE

	to	DKe	GB	SE	NO	LT	Net Positions
from	AL						-200
	AT						-996
	BA						378
	BE		1000				-339
	BG						700
	CH						-3447
	RS						-933
	ME						111
	CZ						2624
	DE	-583		-94			7588
	DKw	590		261	486		902
	MA						-394
	ES						-1084
	FR		1500				5389
	GR						-600
	HR						-841
	HU						-587
	IT						-5628
	KS						0
	LU						-632
	MK						-50
	NL		800		-700		706
	PL			0		0	150
	PT						-172
	RO						600
	SI						-424
	SK						89
	UA						450
	TR						-100
	IE		225				225

RG Baltic

	to	PL	SE	FI	Net Positions
from	EE			4	463
	LV				-324
	LT	0	-600		-1277

RG Nordic

	to	DKw	DE	EE	LT	NL	PL	RU	Net Positions
from	DKe	-590	583						115
	FI			-4				977	1834
	NO	-486				700		0	1811
	SE	-261	94		600		0		-2147

Appendix 8: System changes for the autumn valley scenario

Substations

TSO	Name of Station	Name (code)	U [kV/kV]	Commissioning/ Decommissioning
PSE	Pomorzany	ZPOM5221	220/(110)	Commissioning
MAVIR	Törökfái		380/132	Commissioning
RTE	Montvarin	N/A	225	Commissioning
TTG	Schwandorf (old)	SD	380	Decommissioning
TTG	Schwandorf (new)	SD	380	Commissioning
TTG	Heide/West	HEIW	380	Commissioning
TTG	Stade	STDE	380	Commissioning
Amprion	Rheinau	D7REIN2*	220	Decommissioning
Amprion	Rheinau	D7REIN1*	380	Commissioning
Amprion	Trier	D7TRIE2*	220	Decommissioning
SVK	Rätan	CT2369	420	Commissioning

Lines

TSO	Name	From	To	U [kV]	Commissioning/ Decommissioning
PSE	4524	Krajnik	Glinki	220	Decommissioning
PSE	4529	Glinki	Pomorzany	220	Commissioning
PSE	4530	Glinki	Krajnik	220	Commissioning
PSE	N401	Gdańsk Błonie	Żarnowiec	380	Decommissioning
PSE	N406	Gdańsk Przyjaźń	Żarnowiec	380	Commissioning
PSE	N405	Gdańsk Błonie	Gdańsk Przyjaźń	380	Commissioning
MAVIR	Törökfái - Albertirsa I.	Törökfái	Albertirsa	380	Commissioning
MAVIR	Törökfái - Albertirsa II.	Törökfái	Albertirsa	380	Commissioning
MAVIR	Albertirsa - Józsa	Albertirsa	Józsa	380	Commissioning
TRANSELECTRICA	Nadab - Oradea Sud	Nadab	Oradea Sud	380	Commissioning
TenneT NL	BWK-VHZ O	Bleiswijk	Vijfhuizen	380	Commissioning
TenneT NL	BWK-VHZ P	Bleiswijk	Vijfhuizen	380	Commissioning
RTE	Périzet-Sétier	Périzet	Sétier	225	Decommissioning
RTE	Périzet-Sétier-Montvarin	Périzet	Sétier	225	Commissioning
National Grid	CHIL4-FAWY4	Chilling	Fawley	380	Commissioning
National Grid	BOTW4-CHIL4	Botley Wood	Chilling	380	Commissioning
TTG	497/498	Schwandorf (old)	Schwandorf (new)	380	Commissioning
TTG	495/496	Schwandorf (old)	Schwandorf (new)	380	Commissioning

TSO	Name	From	To	U [kV]	Commissioning/ Decommissioning
TTG		Suederdonn	Heide/West	380	Commissioning
TTG		Suederdonn	Heide/West	380	Commissioning
Amprion	Kugelberg Ost	Buerstadt	Hoheneck	380	Decommissioning
Amprion	Kugelberg West	Buerstadt	Hoheneck	380	Decommissioning
Amprion	Buerstadt Rheinau Ost	Buerstadt	Rheinau	380	Commissioning
Amprion	Buerstadt Rheinau West	Buerstadt	Rheinau	380	Commissioning
Amprion	Rheinau Hoheneck Ost	Rheinau	Hoheneck	380	Commissioning
Amprion	Rheinau Hoheneck West	Rheinau	Hoheneck	380	Commissioning
Amprion	Rheinau Ost (part)	Y-Pfungstadt	Y-Rheinau-2	220	Decommissioning
Amprion	Rheinau West (part)	Y-Rheinau-1	Rheinau	220	Decommissioning
Amprion	Rheinau Ost (part)	Y-Rheinau-2	Rheinau	220	Decommissioning
Amprion	Rheinau Ost (part)	Y-Rheinau-2	Hoheneck	220	Decommissioning
Amprion	Saar Nord	Trier	Diefflen	220	Decommissioning
Amprion	Niederstedem West	Niederstedem	Trier	220	Decommissioning
Amprion	Trier Sued	Bloeren	Trier	220	Decommissioning
Amprion	Niederstedem Bloeren	Niederstedem	Bloeren	220	Commissioning
Amprion	Ensdorf Diefflen	Ensdorf	Diefflen	220	Commissioning
Amprion	Ensdorf Nord (part)	Ensdorf	Y-Diefflen	220	Decommissioning
Statnett	Kvinesdal-Kleven	Kvinesdal	Kleven	300	Commissioning
Statnett	Hysten-Førre #2	Hysten	Førre	300	Commissioning
Statnett	Førre-Lyse #2	Førre	Lyse	300	Commissioning
Statnett	Saurdal-Lyse	Saurdal	Lyse	420	Commissioning
Statnett	Lyse-Tjørhom	Lyse	Tjørhom	420	Commissioning

Transformers and PSTs

TSO	Name	From	To	U [kV/kV]	Max angle	Commissioning/ Decommissioning
PSE	POM-A1	Pomorzany	Pomorzany	380/110	-	Commissioning
UKRENERGO	AT-4	Mukachevo	Mukachevo	380/220	-	Commissioning
TTG	T411	Schwandorf	Schwandorf	380/110	-	Commissioning
TTG	T411	Heide/West	Heide/West	380/110	-	Commissioning
TTG	T412	Heide/West	Heide/West	380/110	-	Commissioning
Statnett	T4 Fjotland	Fjotland	Fjotland	420/300	-	Commissioning
SVK	Stornorfors	Stornorrfors	Stornorrfors	420/220	-	Commissioning

Generation units:

TSO	Name	Name of Substation	U [kV]	Type	Commissioning/Decommissioning
TransnetBW	KKP2	Philippsburg	380	nuclear	Decommissioning
PSE	Opole gen. 6	Dobrzeń	380	Thermal (coal)	Commissioning
PSE	Jaworzno gen. 7	Byczyna	380	Thermal (coal)	Commissioning
PSE	Pątnów gen. 4	Pątnów	220	Thermal (lignite)	Decommissioning
PSE	Stalowa Wola gen. 1	Stalowa Wola	220	Thermal (gas)	Commissioning
PSE	Stalowa Wola gen. 2	Stalowa Wola	220	Thermal (gas)	Commissioning
50Hertz	Jaenschwalde E	Preilack	380	Thermal (lignite)	Decommissioning