Systemforsvarsplanen

TEKST	VERSION	DATO
Første udgave af Systemforsvarsplanen, tilrettet efter offentlig høring og godkendt af Forsyningstilsynet	1	14.01.2021
Høring af opdateret Systemforsvarsplan	1a	06.07.2021
Anden udgave af Systemforsvarsplanen, tilrettet efter offentlig høring.	2	26.04.2023

Normativt krav - behandles ikke		
Krav færdigbehandlet		

Art nr.	Art stk.	Art. afs.	Art. enh.	Artikel emne	Krav	
Chapter II – System defence plan						
Section 1 - General provisions						
Article 11 - Design of the system defence plan						
11	1			By 18 December 2018, each TSO shall design a system defence plan in consultation with relevant DSOs, SGUs, national regulatory authorities, or entities referred to in Article 4(3), neighbouring TSOs and the other TSOs in its synchronous area.		
11	2			When designing its system defence plan, each TSO shall take into account at least the following elements:		
11	2	a		the operational security limits set out in accordance with Article 25 of Regulation (EU) 2017/1485;		
11	2	b		the behaviour and capabilities of load and generation within the synchronous area;		
11	2	c		the specific needs of the high priority significant grid users listed pursuant to point (d) of paragraph 4; and		
11	2	d		the characteristics of its transmission system and of the underlying DSOs systems.		
11	3			The system defence plan shall contain at least the following provisions:		
11	3	a		the conditions under which the system defence plan is activated, in accordance with Article 13;		
11	3	b		the system defence plan instructions to be issued by the TSO; and		

11	3	c		the measures subject to real-time consultation or coordination with the identified parties.		
11	4			In particular, the system defence plan shall include the following elements:		
11	4	a		a list of the measures to be implemented by the TSO on its installations;	Samlet liste udarbejdet i Excel og fremsendt til Forsyningstilsynet den 18. december 2018. Listen indeholder fortrolige oplysninger og offentliggøres ikke.	
11	4	b		a list of the measures to be implemented by DSOs and of the DSOs responsible for implementing those measures on their installations;		
11	4	c		a list of the SGUs responsible for implementing on their installations the measures that result from the mandatory requirements set out in Regulation (EU) 2016/631, (EU) 2016/1388 and (EU) 2016/1447 or from national legislation and a list of the measures to be implemented by those SGUs;		
11	4	d		a list of high priority significant grid users and the terms and conditions for their disconnection, and	Energinet har ikke identificeret højtprioriterede betydelige netbrugere.	
11	4	e		the implementation deadlines for each measure listed in the system defence plan.	Foranstaltninger skal gennemføres senest den 18. december 2019, dog skal foranstaltninger i medfør af artikel 15, stk. 5-8, først finde anvendelse den 18. december 2022, jf. artikel 55.	
11	5			The system defence plan shall include at least the following technical and organisational measures specified in Section 2 of Chapter II:		
11	5	a		system protection schemes including at least:		
11	5	a	i	automatic under-frequency control scheme in accordance with Article 15;		
11	5	a	ii	automatic over-frequency control scheme in accordance with Article 16; and		
11	5	a	iii	automatic scheme against voltage collapse in accordance with Article 17.		
11	5	b		system defence plan procedures, including at least:		
11	5	b	i	frequency deviation management procedure in accordance with Article 18;		
11	5	b	ii	voltage deviation management procedure in accordance with Article 19;		
11	5	b	iii	power flow management procedure in accordance with Article 20;		
11	5	b	iv	assistance for active power procedure in accordance with Article 21; and		
11	5	b	v	manual demand disconnection procedure in accordance with Article 22.		
11	6			The measures contained in the system defence plan shall comply with the following principles:		
11	6	a		their impact on the system users shall be minimal;		
11	6	b		they shall be economically efficient;		
11	6	c		only those measures that are necessary shall be activated; and		

11	6	d		they shall not lead the TSO's transmission system or the interconnected transmission systems into emergency state or blackout state.		
Article 12 - Implementation of the system defence plan						
12	1			By 18 December 2019 each TSO shall implement those measures of its system defence plan that are to be implemented on the transmission system. It shall maintain the implemented measures henceforth.		
12	2			By 18 December 2018 each TSO shall notify the transmission connected DSOs of the measures, including the deadlines for implementation, which are to be implemented on:		
12	2	a		the DSO's installations pursuant to Article 11(4); or		
12	2	b		the installations of SGUs identified pursuant to Article 11(4) connected to their distribution systems; or		
12	2	c		the installations of defence service providers connected to their distribution systems; or		
12	2	d		the installations of DSOs connected to their distribution systems.		
12	3			By 18 December 2018 each TSO shall notify the SGUs identified pursuant to point (c) of Article 11(4) or the defence service providers directly connected to its transmission system of the measures which are to be implemented on their installations, including the deadlines for the implementation.		
12	4			When provided for in national legislation, the TSO shall notify directly SGUs identified pursuant to point (c) of Article 11(4), defence service providers or DSOs connected to distribution systems of the measures which are to be implemented on their installations, including the deadlines for their implementation. It shall inform the concerned DSO of this notification.	Ikke relevant – er ikke foreskrevet i national lovgivning.	
12	5			Where a TSO notifies a DSO in accordance with paragraph 2, the DSO shall notify in turn, without delay, the SGUs, the defence service providers and the DSOs connected to its distribution system of the measures of the system defence plan that they have to implement on their respective installations, including the deadlines for their implementation.		
12	6			Each notified DSO, SGU and defence service provider shall:		
12	6	a		implement the measures notified pursuant to this Article no later than 12 months from the date of notification;		
12	6	b		confirm the implementation of the measures to the notifying system operator, who shall, when different from the TSO, notify the confirmation to the TSO; and		
12	6	c		maintain the measures implemented on its installations.		
Article 13 - Activation of the system defence plan						

13	1			Each TSO shall activate the procedures of its system defence plan pursuant to point (b) of Article 11(5) in coordination with DSOs and SGUs identified pursuant to Article 11(4) and with defence service providers.		
13	2			In addition to the automatically activated schemes of the system defence plan, pursuant to point (a) of Article 11(5), each TSO shall activate a procedure of the system defence plan when:		
13	2	a		the system is in emergency state in accordance with the criteria set out in Article 18(3) of Regulation (EU) 2017/1485 and there are no remedial actions available to restore the system to the normal state; or		
13	2	b		based on the operational security analysis, the operational security of the transmission system requires the activation of a measure of the system defence plan pursuant to Article 11(5) in addition to the available remedial actions.		
13	3			Each DSO and SGU identified pursuant to Article 11(4), as well as each defence service provider shall execute without undue delay the system defence plan instructions issued by the TSO pursuant to point (c) of Article 11(3), in accordance with the system defence plan procedures provided for in point (b) of Article 11(5).		
13	4			Each TSO shall activate procedures of its system defence plan referred to in point (b) of Article 11(5) having a significant cross-border impact in coordination with the impacted TSOs.		
Article 14 - Inter-TSO assistance and coordination in emergency state						
14	1			Upon request from a TSO in emergency state, each TSO shall provide through interconnectors any possible assistance to the requesting TSO, provided this does not cause its transmission system or the interconnected transmission systems to enter into emergency or blackout state.		
14	2			When the assistance needs to be provided through direct current interconnectors, it may consist in carrying out the following actions, taking into account the technical characteristics and capability of HVDC system:		
14	2	a		manual regulation actions of the transmitted active power to help the TSO in emergency state to bring power flows within operational security limits or frequency of neighbouring synchronous area within system frequency limits for alert state defined pursuant to Article 18(2) of Regulation (EU) 2017/1485;		
14	2	b		automatic control functions of the transmitted active power based on the signals and criteria set out in Article 13 of Regulation (EU) 2016/1447;		
14	2	c		automatic frequency control pursuant to Articles 15 to 18 of Regulation (EU) 2016/1447 in case of islanded operation;		
14	2	d		voltage and reactive power control pursuant to Article 24 of Regulation (EU) 2016/1447, and		
14	2	e		any other appropriate action.		

14	3			Each TSO may proceed to a manual disconnection of any transmission system element having a significant cross-border impact, including an interconnector, subject to the following requirements:		
14	3	a		the TSO shall coordinate with neighbouring TSOs; and		
14	3	b		this action shall not lead the remaining interconnected transmission system into emergency state or blackout state.		
14	4			Notwithstanding paragraph 3, a TSO may manually disconnect any transmission system element having a significant cross-border impact, including an interconnector, without coordination, in exceptional circumstances implying a violation of the operational security limits, to prevent endangering personnel safety or damaging equipment. Within 30 days of the incident, the TSO shall prepare a report at least in English containing a detailed explanation of the rationale, implementation and impact of this action and submit it to the relevant regulatory authority in accordance with Article 37 of Directive 2009/72/EC and neighbouring TSOs, and make it available to the significantly affected system users.		
Section 2 – Measures of the system defence plan						
Article 15 - Automatic under-frequency control scheme						
15	1			The scheme for the automatic control of under-frequency of the system defence plan shall include a scheme for the automatic low frequency demand disconnection and the settings of the limited frequency sensitive mode-underfrequency in the TSO load frequency control (LFC) area.		
15	2			In the design of its system defence plan, each TSO shall provide for the activation of the limited frequency sensitive mode-underfrequency prior to the activation of the scheme for the automatic low frequency demand disconnection, where the rate of change of frequency allows it.	**Fælles for alle forbrugskategorier:** DCC art. 19, stk. 1, a) – *(LFDD)* **Produktionsanlæg:** RfG art. 15, stk. 2, c) – *(LFSM – U)* TF 3.2.2 afsnit 5.2.1 – *Frekvensrespons* TF 3.2.3 afsnit 5.1.1.2 – *Anlæg i kategori C og D (Frekvensrespons)* TF 3.2.5 afsnit 5.2.1 – *Frekvensrespons* TF 3.3.1 afsnit 5.2.1 – *Frekvensrespons (LFSM-U og LFSM-O)*	
15	3			Prior to the activation of the automatic low frequency demand disconnection scheme set out in Article 15 and provided that the rate of change of frequency allows it, each TSO shall, directly or indirectly through DSOs, activate demand response from the relevant defence service providers and:	**Produktionsanlæg:** TF 3.2.2 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.3 afsnit 5.1 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.5 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.3.1 afsnit 5.2 – *Reguleringsfunktioner af aktiv effekt og frekvens*	

15	3	a		switch energy storage units acting as load to generation mode at an active power set-point established by the TSO in the system defence plan; or	**Energilageranlæg:** TF 3.3.1 afsnit 5.2.1 – *Frekvensrespons (LFSM-U og LFSM-O)*	
15	3	b		when the energy storage unit is not capable of switching fast enough to stabilise frequency, manually disconnect the energy storage unit.	**Energilageranlæg:** TF 3.3.1 afsnit 5.2.1 – *Frekvensrespons (LFSM-U og LFSM-O)*	
15	4			Each TSO shall establish in its system defence plan the frequency thresholds at which the automatic switching or disconnection of energy storage units shall occur. These frequency thresholds shall be lower or equal to the system frequency limit defined for the emergency state in Article 18(3) of Regulation (EU) 2017/1485 and higher than the frequency limit for demand disconnection starting mandatory level laid down in the Annex.	**Energilageranlæg:** TF 3.3.1 afsnit 5.2.1 – *Frekvensrespons (LFSM-U og LFSM-O)*	
15	5			Each TSO shall design the scheme for the automatic low frequency demand disconnection in accordance with the parameters for shedding load in real-time laid down in the Annex. The scheme shall include the disconnection of demand at different frequencies, from a 'starting mandatory level' to a 'final mandatory level', within an implementation range whilst respecting a minimum number and maximum size of steps. The implementation range shall define the maximum admissible deviation of netted demand to be disconnected from the target netted demand to be disconnected at a given frequency, calculated through a linear interpolation between starting and final mandatory levels. The implementation range shall not allow the disconnection of less netted demand than the amount of netted demand to be disconnected at the starting mandatory level. A step cannot be considered as such if no netted demand is disconnected when this step is reached.	**Fælles for alle forbrugskategorier (Generelt krav):** DCC art. 19, stk. 1, litra a) – *(LFDD)* <u>CE:</u> Trin à 8 %. Trin 1: f < 49,0 Hz Trin 2: f < 48,8 Hz Trin 3: f < 48,6 Hz Trin 4: f < 48,4 Hz Trin 5: f < 48,2 Hz Trin 6: f < 48,0 Hz <u>N:</u> Trin à 5 % + Sikkerhedsmargin Trin 1: f < 48,8 Hz Trin 2: f < 48,6 Hz Trin 3: f < 48,4 Hz Trin 4: f < 48,2 Hz Trin 5: f < 48,0 Hz Et aflastningstrin må ikke være større end 60 MW. Implementeringsfrist for det nordiske synkronområde: 18. december 2025. **Forbrugsanlæg kat. 4:** Afbrydelsen af forbrugsbelastning kan ske i trin à 60MW i det enkelte POC (Point Of Connection). Hvis dette ikke er muligt, kan der laves en individuel vurdering i de enkelte tilfælde. Ovenstående aftales med Energinet i nettilslutningsaftalen.	

					Forbrugsanlæg kat. 6: Manuel indstilling af togdrift. • Tog mellem stationer: Stop togdrift ved den nærmeste station eller trinbræt • Tog ved station: Bliv holdende. • Maksimal tid: 15 minutter CE: Indstilling: f < 49,0 Hz N: Indstilling: f < 48,8 Hz	
15	6			Each TSO or DSO shall install the relays necessary for low frequency demand disconnection taking into account at least load behaviour and dispersed generation.		
15	7			When implementing the scheme for the automatic low frequency demand disconnection pursuant to the notification under Article 12(2), each TSO or DSO shall:		
15	7	a		avoid setting an intentional time delay in addition to the operating time of the relays and circuit breakers;		
15	7	b		minimise the disconnection of power generating modules, especially those providing inertia; and		
15	7	c		limit the risk that the scheme leads to power flow deviations and voltage deviations outside operational security limits.		
15	7			If a DSO cannot fulfil the requirements under points (b) and (c), it shall notify the TSO and propose which requirement shall apply. The TSO, in consultation with the DSO shall establish the applicable requirements based on a joint cost-benefit analysis.		
15	8			The scheme for the automatic low frequency demand disconnection of the system defence plan may provide for netted demand disconnection based on frequency gradient provided that:	Intet krav stillet	
15	8	a		it is activated only:	N/A	
15	8	a	i	when the frequency deviation is higher than the maximum steady state frequency deviation and the frequency gradient is higher than the one produced by the reference incident;	N/A	
15	8	a	ii	until the frequency reaches the frequency of the demand disconnection starting mandatory level;	N/A	
15	8	b		it complies with the Annex; and	N/A	
15	8	c		it is necessary and justified in order to maintain efficiently the operational security.	N/A	

15	9			In case the scheme for the automatic low frequency demand disconnection of the system defence plan includes netted demand disconnection based on frequency gradient, as described in paragraph 8, the TSO shall submit, within 30 days of the implementation, a report containing a detailed explanation of the rationale, implementation and impact of this measure to the national regulatory authority.		
15	10			A TSO may include in the scheme for automatic low frequency demand disconnection of its system defence plan additional steps for netted demand disconnection below the final mandatory level of demand disconnection set out in the Annex.	Intet krav stillet	
15	11			Each TSO shall be entitled to implement additional system protection schemes that are triggered by a frequency smaller or equal to the frequency of the final mandatory level of demand disconnection and which aim at a faster restoration process. The TSO shall ensure that such additional schemes do not further deteriorate frequency.	Intet krav stillet	
Article 16 - Automatic over-frequency control scheme						
16	1			The scheme for automatic over-frequency control of the system defence plan shall lead to an automatic decrease of the total active power injected in each LFC area.		
16	2			In consultation with the other TSOs of its synchronous area, each TSO shall set out the following parameters of its scheme for automatic over-frequency control:		
16	2	a		the frequency thresholds for its activation; and	**Produktionsanlæg:** RfG art. 13, stk. 2, c) – *(Tærskelværdi)* TF 3.2.2 afsnit 5.2.1 – *Frekvensrespons* TF 3.2.3 afsnit 5.1.1.2 – *Anlæg i kategori C og D (Frekvensrespons)* TF 3.2.5 afsnit 5.2.1 – *Frekvensrespons* TF 3.3.1 afsnit 5.2.1 – *Frekvensrespons (LFSM-U og LFSM-O)*	
16	2	b		the reduction ratio of injection of active power.	**Produktionsanlæg:** RfG art. 13, stk. 2, d) – *(Reduktionsforhold)* TF 3.2.2 afsnit 5.2.1 – *Frekvensrespons* TF 3.2.3 afsnit 5.1.1.2 – *Anlæg i kategori C og D (Frekvensrespons)* TF 3.2.5 afsnit 5.2.1 – *Frekvensrespons* TF 3.3.1 afsnit 5.2.1 – *Frekvensrespons (LFSM-U og LFSM-O)*	
16	3			Each TSO shall design its automatic over-frequency control scheme taking into account the capabilities of the power generating modules concerning the limited frequency sensitive mode — overfrequency and of the energy storage units, in its LFC area. If the limited frequency sensitive mode — overfrequency does not exist or is not sufficient to fulfil the requirements set out in points (a) and (b)	**Produktionsanlæg:** RfG art. 13, stk. 2, f) – *(Kontinuerlig drift)* TF 3.3.1 afsnit 5.2.1 – *Frekvensrespons (LFSM-U og LFSM-O)*	

				of paragraph 2, each TSO shall set up in addition a step-wise linear disconnection of generation in its LFC area. The TSO shall establish the maximum size of the steps for disconnection of power generating modules and/or of HVDC systems in consultation with the other TSOs of its synchronous area.		
Article 17 - Automatic scheme against voltage collapse						
17	1			The automatic scheme against voltage collapse of the system defence plan may include one or more of the following schemes, depending on the results of a TSO's assessment of system security:	Intet krav stillet	
17	1	a		a scheme for low voltage demand disconnection according to Article 19(2) of Regulation (EU) 2016/1388;	N/A	
17	1	b		a blocking scheme for on load tap changer according to Article 19(3) of Regulation (EU) 2016/1388; and	N/A	
17	1	c		system protection schemes for voltage management.	N/A	
17	2			Unless the assessment pursuant to paragraph 1 demonstrates that implementing a blocking scheme for on load tap changer is not necessary to prevent a voltage collapse in the TSO control area, the TSO shall establish the conditions under which the on load tap changer shall block according to Article 19(3) of Regulation (EU) 2016/1388, including at least:	N/A	
17	2	a		the blocking method (local or remote from control room);	N/A	
17	2	b		the voltage level threshold at the connection point;	N/A	
17	2	c		the flow direction of reactive power; and	N/A	
17	2	d		the maximum lapse of time between the detection of the threshold and the blocking.	N/A	
Article 18 - Frequency deviation management procedure						
18	1			The procedure for the management of frequency deviations of the system defence plan shall contain a set of measures to manage a frequency deviation outside the frequency limits defined for the alert state in Article 18(2) of Regulation (EU) 2017/1485. The frequency deviation management procedure shall be in line with the procedures set out for remedial actions which need to be managed in a coordinated way in accordance with Article 78(4) of Regulation (EU) 2017/1485 and shall fulfil at least the following requirements:		
18	1	a		a decrease of generation shall be smaller than the decrease of load during under-frequency events; and		
18	1	b		a decrease of generation shall be greater than the decrease of load during over-frequency events.		
18	2			Each TSO shall adapt the operating mode of its LFC in order to prevent interference with manual activation or deactivation of active power as laid down in paragraphs 3 and 5.		

18	3			Each TSO shall be entitled to establish an active power set-point that each SGU identified pursuant to point (c) of Article 11(4) shall maintain, provided that the set-point fulfils the technical constraints of the SGU. Each TSO shall be entitled to establish an active power set-point that each defence service provider shall maintain provided this measure applies to them pursuant to the terms and conditions referred to in Article 4(4) and the set-point respects the technical constraints of the defence service provider. The SGUs and defence service providers shall execute without undue delay the instructions given by the TSO directly or indirectly through DSOs and shall remain in that state until further instructions are issued. Where the instructions are given directly, the TSO shall inform the relevant DSOs without undue delay.	**Produktionsanlæg**: RfG art. 15, stk. 2, a) – (*Regulering af aktiv effekt)* TF 3.2.2 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.3 afsnit 5.1 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.5 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.3.1 afsnit 5.2 – *Reguleringsfunktioner af aktiv effekt og frekvens*	
18	4			Each TSO shall be entitled to disconnect SGUs and defence service providers, directly or indirectly through DSOs. SGUs and defence service providers shall remain disconnected until further instructions are issued. Where SGUs are directly disconnected, the TSO shall inform the relevant DSOs without undue delay. Within 30 days of the incident, the TSO shall prepare a report containing a detailed explanation of the rationale, implementation and impact of this action and submit it to the relevant regulatory authority in accordance with Article 37 of Directive 2009/72/EC as well as make it available to the significantly affected system users.	**Forbrugsanlæg:** DCC art. 19, stk. 4, a) – (*Tilkobling af BNB'er)* DCC art. 19, stk. 4, c) – (*Afkobling af BNB'er)* **Produktionsanlæg**: TF 3.2.2 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.3 afsnit 5.1 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.5 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.3.1 afsnit 5.2 – *Reguleringsfunktioner af aktiv effekt og frekvens*	
18	5			Prior to the activation of the automatic low frequency demand disconnection scheme set out in Article 15 and provided that the rate of change of frequency allows it, each TSO shall, directly or indirectly through DSOs, activate demand response from the relevant defence service providers and:	**Produktionsanlæg:** TF 3.2.2 afsnit 5.2.1 – *Frekvensrespons* TF 3.2.3 afsnit 5.1.1.2 – *Anlæg i kategori C og D (Frekvensrespons)* TF 3.2.5 afsnit 5.2.1 – *Frekvensrespons* TF 3.3.1 afsnit 5.2.1 – *Frekvensrespons (LFSM-U og LFSM-O)*	
18	5	a		switch energy storage units acting as load to generation mode at an active power set-point established by the TSO in the system defence plan; or	**Energilageranlæg:** TF 3.3.1 afsnit 5.2.1 – *Frekvensrespons (LFSM-U og LFSM-O)*	
18	5	b		when the energy storage unit is not capable of switching fast enough to stabilise frequency, manually disconnect the energy storage unit.	**Energilageranlæg:** TF 3.3.1 afsnit 5.2.1 – *Frekvensrespons (LFSM-U og LFSM-O)*	
Article 19 - Voltage deviation management procedure						
19	1			The procedure for the management of voltage deviations of the system defence plan shall contain a set of measures to manage voltage deviations outside the operational security limits set out in Article 25 of Regulation (EU) 2017/1485.		
19	2			Each TSO shall be entitled to establish a reactive power range or voltage range and instruct the DSOs and SGUs identified for this measure pursuant to Article 11(4) to maintain it, in accordance with Articles 28 and 29 of Regulation (EU) 2017/1485.	**Produktionsanlæg:** RfG art. 18, stk. 2, b) – *(Regulering af reaktiveffekt – type C, synkron)*	

					RfG art. 18, stk. 2, c) – *(Regulering af reaktiveffekt – type C, synkron)* RfG art. 21, stk. 3, b) – *(Regulering af reaktiveffekt – type C, power park)* RfG art. 21, stk. 3, c) – *(Regulering af reaktiveffekt – type C, power park)* TF 3.2.2 afsnit 5.3 – *Reguleringsfunktioner for reaktiv effekt og spænding* TF 3.2.3 afsnit 5.2 – *Reguleringsfunktioner for reaktiv effekt* TF 3.2.5 afsnit 5.3 – *Reguleringsfunktioner for reaktiv effekt og spænding* TF 3.3.1 afsnit 5.3 – *Reguleringsfunktioner for reaktiv effekt og spænding* TF 3.4.1 afsnit 5.2 – *Udveksling af reaktiv effekt* **Forbrugsanlæg:** DCC art. 15, stk. 1, a) – *(Regulering af reaktiveffekt – transmissionstilsluttet forbrug)* **Distributionssystem:** DCC art. 15, stk. 1, b) – *(Regulering af reaktiveffekt - distributionssystemer)*	
19	3			Upon request of neighbouring TSO in emergency state, each TSO shall make available all reactive power capabilities that do not lead its transmission system into emergency state or blackout state.		
Article 20 - Power flow management procedure						
20	1			The procedure for power flow management of the system defence plan shall include a set of measures to manage power flow outside the operational security limits set out in Article 25 of Regulation (EU) 2017/1485.		
20	2			Each TSO shall be entitled to establish an active power set-point that each SGU identified pursuant to point (c) Article 11(4) shall maintain provided that the set-point respects the technical constraints of the SGU. Each TSO shall be entitled to establish an active power set-point that each defence service provider shall maintain provided this measure applies to them pursuant to the terms and conditions referred to in Article 4(4) and the set-point respects the technical constraints of the defence service providers. The SGUs and defence service providers shall execute without undue delay the instructions given by the TSO directly or indirectly through DSOs and shall remain in that state until further instructions are issued. Where the instructions are given directly, the TSO shall inform the relevant DSOs without undue delay.	**Produktionsanlæg:** RfG art. 15, stk. 2, a) – (*Regulering af aktiv effekt)* TF 3.2.2 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.3 afsnit 5.1 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.5 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.3.1 afsnit 5.2 – *Reguleringsfunktioner af aktiv effekt og frekvens*	

20	3			Each TSO shall be entitled to disconnect SGUs and defence service providers, directly or indirectly through DSOs. SGUs and defence service providers shall remain disconnected until further instructions are issued. Where SGU are directly disconnected, the TSO shall inform the relevant DSOs without undue delay. Within 30 days of the incident, the TSO shall prepare a report containing a detailed explanation of the rationale, implementation and impact of this action and submit it to the relevant regulatory authority in accordance with Article 37 of Directive 2009/72/EC.	**Forbrugsanlæg:** DCC art. 19, stk. 4, a) – (*Tilkobling af BNB'er)* DCC art. 19, stk. 4, c) – (*Afkobling af BNB'er)* **Produktionsanlæg**: TF 3.2.2 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.3 afsnit 5.1 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.5 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.3.1 afsnit 5.2 – *Reguleringsfunktioner af aktiv effekt og frekvens*	
Article 21 - Assistance for active power procedure						
21	1			In case of absence of control area adequacy in the day-ahead or intraday timeframe, identified pursuant to paragraphs 1 and 2 of Article 107 of Regulation (EU) 2017/1485, and prior to any potential suspension of market activities pursuant to Article 35, a TSO shall be entitled to request assistance for active power from:		
21	1	a		any balancing service provider, which, upon the TSO request, shall change its availability status to make available all its active power, provided it was not already activated through the balancing market, and conforming to its technical constraints;	**Produktionsanlæg**: RfG art. 15, stk. 2, a) – (*Regulering af aktiv effekt)* TF 3.2.2 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.3 afsnit 5.1 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.5 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.3.1 afsnit 5.2 – *Reguleringsfunktioner af aktiv effekt og frekvens*	
21	1	b		any SGU connected in its LFC area, which does not already provide a balancing service to the TSO, and which, upon the TSO request, shall make available all its active power, conforming to its technical constraints; and	**Produktionsanlæg**: RfG art. 15, stk. 2, a) – (*Regulering af aktiv effekt)* TF 3.2.2 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.3 afsnit 5.1 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.5 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.3.1 afsnit 5.2 – *Reguleringsfunktioner af aktiv effekt og frekvens*	
21	1	c		other TSOs that are in the normal or alert state.	**Systemansvarlige transmissionsvirksomhed:** 50Hertz Transmission GmbH: System Operation Agreement Kapitel 5.8.3 og 5.8.4 TenneT TSO GmbH: System Operation Agreement kapitel 3.5.3, 3.5.4 og Annex 13	

					TenneT TSO B.V.: System Operation Agreement appendix 15 “System Disturbance Management” Statnett: System Operation Agreement appendix 9 "Rules for managing power shortages" Svenska kraftnät: System Operation Agreement appendix 9 "Rules for managing power shortages"	
21	2			A TSO may activate the assistance for active power from a balancing service provider or a SGU, under points (a) and (b) of paragraph 1, only if it has activated all balancing energy bids available, taking into account the available cross zonal capacity at the moment of absence of adequacy of the control area.		
21	3			Each TSO who has been subject to a request for assistance for active power pursuant to paragraph 1(c) shall:		
21	3	a		make available its unshared bids;	**Systemansvarlige transmissionsvirksomheder:** 50Hertz Transmission GmbH: System Operation Agreement Annex 18. TenneT TSO GmbH: System Operation Agreement kapitel 3.5.3, 3.5.4 og Annex 13 TenneT TSO B.V.: System Operation Agreement appendix 15 “System Disturbance Management” Statnett: (Nordic) System Operation Agreement appendix 9 "Rules for managing power shortages" Svenska kraftnät: (Nordic) System Operation Agreement appendix 9 "Rules for managing power shortages"	
21	3	b		be entitled to activate the available balancing energy, in order to provide the corresponding power to the requesting TSO; and	**Systemansvarlige transmissionsvirksomheder:** 50Hertz Transmission GmbH: System Operation Agreement Annex 18	

					TenneT TSO GmbH: System Operation Agreement Annex 10 TenneT TSO B.V.: System Operation Agreement appendix 15 “System Disturbance Management” Statnett: (Nordic) System Operation Agreement appendix 9 "Rules for managing power shortages" Svenska kraftnät: (Nordic) System Operation Agreement appendix 9 "Rules for managing power shortages"	
21	3	c		be entitled to request the assistance for active power from its balancing service providers and from any SGU connected in its LFC area which does not already provide a balancing service to the TSO, in order to provide the corresponding assistance for active power to the requesting TSO.	**Produktionsanlæg**: RfG art. 15, stk. 2, a) – (*Regulering af aktiv effekt)* TF 3.2.2 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.3 afsnit 5.1 – *Reguleringsfunktioner for aktiv effekt* TF 3.2.5 afsnit 5.2 – *Reguleringsfunktioner for aktiv effekt* TF 3.3.1 afsnit 5.2 – *Reguleringsfunktioner af aktiv effekt og frekvens*	
21	4			When activating the active power requested pursuant to paragraph 1(c), the requesting and the requested TSOs shall be entitled to use:	**Systemansvarlige transmissionsvirksomheder:** 50Hertz Transmission GmbH: System Operation Agreement (under udarbejdelse) TenneT TSO GmbH: System Operation Agreement Annex 10 TenneT TSO B.V.: System Operation Agreement appendix 15 “System Disturbance Management” Statnett: (Nordic) System Operation Agreement appendix 9 "Rules for managing power shortages" Svenska kraftnät: (Nordic) System Operation Agreement appendix 9 "Rules for managing power shortages"	

21	4	a		available cross-zonal capacity in case the activation is made before the intraday cross-zonal gate closure time and if the provision of concerned cross-zonal capacities has not been suspended pursuant to Article 35;		
21	4	b		additional capacity that may be available due to real-time status of the system in which case the requesting and the requested TSOs shall coordinate with other significantly affected TSOs in accordance with Article 6(5).		
21	5			Once the requested and requesting TSOs have agreed on the conditions for the provision of assistance for active power, the agreed amount of active power and timeslot for the provision shall be firm, unless the transmission system of the TSO providing the assistance enters into the emergency or blackout state.		
Article 22 - Manual demand disconnection procedure						
22	1			In addition to the measures set out in Articles 18 to 21, each TSO may establish an amount of netted demand to be manually disconnected, directly by the TSO or indirectly through DSOs, when necessary to prevent the propagation or worsening of an emergency state. Where demand is to be directly disconnected, the TSO shall inform the relevant DSOs without delay.	**Distributionssystemer:** Aflastningen skal foregå i aflastningsregioner. Disse regioner kan bestå af følgende kombinationer: • En hel netvirksomhed alene • En andel af en netvirksomhed alene • En hel eller en andel af en netvirksomhed i samarbejde med et antal andre netvirksomheder (hele eller andele). Et enkelt aflastningstrin må ikke være større end 60 MW. Det er tilladt at have sammenfald mellem de manuelle trin, jf. art. 22, og automatiske trin, jf. art. 15. **Gældende frem til 18. december 2023 er følgende:** **CE:** 10 manuelle aflastningstrin a 8 % - 10 % Mulighed for friholdelse af op til 20% forbrug til aflastning, som dog skal kunne bruges i en genopretningssituation eller tillastningssituation efter genopretning. **Gældende frem til 18. december 2025 er følgende:** **N:** 8-16 manuelle aflastningstrin a 5 % - 10 %	

					Mulighed for friholdelse af op til 20% forbrug til aflastning, som dog skal kunne bruges i en genopretningssituation eller tillastningssituation efter genopretning. **Gældende fra 18. december 2023:** **CE:** 10 manuelle aflastningstrin a 8 % Mulighed for friholdelse af op til 20% forbrug til aflastning, som dog skal kunne bruges i en genopretningssituation eller tillastningssituation efter genopretning. **Gældende fra 18. december 2025** **N:** 16 manuelle aflastningstrin a 5 % Mulighed for friholdelse af op til 20% forbrug til aflastning, som dog skal kunne bruges i en genopretningssituation eller tillastningssituation efter genopretning.	
22	2			The TSO shall activate the manual disconnection of the netted demand referred to in paragraph 1 to:		
22	2	a		resolve overloads or under voltage situations; or		
22	2	b		resolve situations in which assistance for active power pursuant to Article 21 has been requested but is not sufficient to maintain adequacy in day-ahead and intraday timeframes in its control area, pursuant to Article 107 of Regulation (EU) 2017/1485, leading to a risk of frequency deterioration in the synchronous area.		
22	3			The TSO shall notify DSOs of the amount of netted demand established pursuant to paragraph 1 to be disconnected on their distribution systems. Each DSO shall disconnect the notified amount of netted demand, without undue delay.	Aflastning skal være gennemført senest 15 minutter efter, at Energinets Kontrolcenter El har beordret aflastning, medmindre et senere tidspunkt for aflastning er direkte aftalt. Hvis den beordrede aflastning på grund af opståede tekniske fejl i den konkrete situation ikke kan lade sig gennemføre inden for 15 minutter eller inden for en eventuel anden aftalt tid, skal fortsat aflastning stoppes, og dette skal straks meddeles til Energinets Kontrolcenter El.	
22	4			Within 30 days of the incident, the TSO shall prepare a report containing a detailed explanation of the rationale, implementation and impact of this action and submit it to the relevant regulatory authority in accordance with Article 37 of Directive 2009/72/EC.		