

## List of Priority A Needs for Ukrainian Power System 17/02/2023

Sector	Damaged equipment	Technical parameters*	Unit	Required quantity
TSO	Autotransformer 750 kV	333000 kVA Voltages HV/MV/LV - 750/330/15,75 kV	phase	20
	Autotransformer 330 kV	250 000 kVA Voltages HV/MV/LV - 330/150/10 kV	pcs	4
	Autotransformer 330 kV	250 000 kVA Voltages HV/MV/LV - 330/150/35 kV	pcs	7
	Autotransformer 330 kV	250 000 kVA Voltages HV/MV/LV - 330/220/35 kV	pcs	2
	Autotransformer 330 kV	200 000 kVA Voltages HV/MV/LV - 330/110/35 kV	pcs	4
	Autotransformer 330 kV	200 000 kVA Voltages HV/MV/LV - 330/110/10 kV	pcs	9
	Autotransformer 330 kV	200 000 kVA Voltages HV/MV/LV - 330/110/6 kV	pcs	2
	Autotransformer 330 kV	195 000 kVA Voltages HV/MV/LV - 330/110/35 kV	pcs	1
	Autotransformer 330 kV	195 000 kVA Voltages HV/MV/LV - 330/110/10 kV	pcs	3
	Autotransformer 330 kV	125 000 kVA Voltages HV/MV/LV - 330/110/10 kV	pcs	3
	Autotransformer 330 kV	125 000 kVA Voltages HV/MV/LV - 330/110/35 kV	pcs	3
	Autotransformer 220 kV	200 000 kVA Voltages HV/MV/LV - 220/110/10 kV	pcs	1
	Autotransformer 220 kV	125 000 kVA Voltages HV/MV/LV - 220/110/35 kV	pcs	3
	Autotransformer 220 kV	125 000 kVA Voltages HV/MV/LV - 220/110/10 kV	pcs	2
Autotransformer 220 kV	Power - 125 000 kVA Voltages HV/MV/LV - 220/110/6 kV	pcs.	2	
DSO & Generation (DTEK & other private operators)	Autotransformer 220 kV	Power - 250 000 kVA Voltages HV/MV/LV - 220/110/10,5 kV	pcs.	1
	Transformer 220 kV	Power - 200 000 kVA Voltages HV/LV - 220/18 kV	pcs.	1
	Autotransformer 330 kV	Power - 240 000 kVA Voltages HV/LV - 330/220 kV	pcs.	1
	Autotransformer 400 kV	Power - 210 000 kVA Voltages HV/LV - 400/330 kV	pcs.	2
	Autotransformer 400 kV	Power - 133 000 kVA Voltages HV/LV - 400/220 kV	pcs.	1

\*voltage classes might not be precisely the same, i.e. 345 kV AT is equivalent to 330 kV AT.

## List of Priority B Needs for Ukrainian Power System 17/02/2023

Sector	Damaged equipment	Technical parameters*	Unit	Required quantity
TSO	Transformer 150 kV	Three-phase Power - 63000 kVA Voltages HV/MV/LV - 150/38,5/6,6 kV	pcs.	1
	Transformer 110 kV	Three-phase Power - 20000 kVA Voltages HV/MV/LV - 110/35/6 kV	pcs.	1
	Transformer 35 kV	Three-phase Power - 2500 kVA Voltages HV/LV - 35/6 kV	pcs.	1
	Transformer 35 kV	Three-phase Power - 630 kVA Voltages HV/LV - 35/0,4 kV	pcs.	1
	Transformer 15,75 kV	Three-phase Power - 4000 kVA Voltages HV/LV - 15,75/6kV	pcs.	1
	Transformer 10 kV	Three-phase Power - 10000 kVA Voltages HV/LV - 10/6 kV	pcs.	1
	Transformer 10 kV	Three-phase Power - 1000 kVA Voltages HV/LV - 10/0,4 kV	pcs.	2
	Transformer 10 kV	Three-phase Power - 630 kVA Voltages HV/LV - 10/0,4 kV	pcs.	5
	Transformer 6 kV	Three-phase Power - 630 kVA Voltages HV/LV - 6/0,4 kV	pcs.	3
	Reactor 750 kV	Single-phase Rated power - 110000 kVAp Rated voltage - 750 kV	phase	7
	Regulating transformer 35 kV	Three-phase Power - 63 000 kVA Voltages HV/LV - 38,5/38,5±10x1,5% kV	pcs.	4
	Regulating transformer 10 kV	Three-phase Power - 40 000 kVA Voltages HV/LV - 11/11±10x1,5% kV	pcs.	2
	Regulating transformer 35 kV	Three-phase Power - 40 000 kVA Voltages HV/LV - 35/35 kV	pcs.	1
	Regulating transformer 35 kV	Three-phase Power - 10 000 kVA Voltages HV/LV - 38,5/38,5±10x1,5% kV	pcs.	2
	Phase Shifting Transformer 110 kV	Single-phase Rated power - 92000 kVA Voltages RW/EW/CW - 68/15,75/10,5 kV	phase	10
	Circuit breaker 750 kV	Rated voltage - 750 kV Rated current - 4000A Rated short-circuit breaking current - 40 kA	set 3 phases	5
	Circuit breaker 330 kV	Rated voltage - 330 kV Rated current - 3150A Rated short-circuit breaking current - 40 kA	set 3 phases	26
	Circuit breaker 330 kV	Rated voltage - 330 kV Rated current - 4000A Rated short-circuit breaking current - 63 kA	set 3 phases	2
	Circuit breaker 220 kV	Rated voltage - 220 kV Rated current - 3150A Rated short-circuit breaking current - 40 kA	set 3 phases	11
	Circuit breaker 150 kV	Rated voltage - 150 kV Rated current - 3150A Rated short-circuit breaking current - 40 kA	set 3 phases	15
	Circuit breaker 110 kV	Rated voltage - 110 kV Rated current - 3150A Rated short-circuit breaking current - 40 kA	set 3 phases	44
	Circuit breaker 35 kV	Rated voltage - 35 kV Rated current - 2000A Rated short-circuit breaking current - 40 kA	pcs.	4
	Circuit breaker 10 kV	Rated voltage - 10 kV Rated current - 630A Rated short-circuit breaking current - 20 kA	bay	3
Disconnecter 750 kV with one earthing switch	Rated voltage - 750 kV Rated current - 4000A	set 3 phases	1	
Disconnecter 750 kV with one earthing switch	Rated voltage - 750 kV Rated current - 3150A	set 3 phases	2	
Disconnecter 330 kV with two earthing switches	Rated voltage - 330 kV Rated current - 3150A	set 3 phases	21	

Disconnecter 330 kV with one earthing switch	Rated voltage - 330 kV Rated current - 3150A	set 3 phases	31
Disconnecter 220 kV with two earthing switches	Rated voltage - 220 kV Rated current - 2000A	set 3 phases	5
Disconnecter 220 kV with one earthing switch	Rated voltage - 220 kV Rated current - 2000A	set 3 phases	13
Disconnecter 150 kV with two earthing switches	Rated voltage - 150 kV Rated current - 2000A	set 3 phases	5
Disconnecter 150 kV with one earthing switch	Rated voltage - 150 kV Rated current - 2000A	set 3 phases	27
Disconnecter 110 kV with two earthing switches	Rated voltage - 110 kV Rated current - 2000A	set 3 phases	9
Disconnecter 110 kV with two earthing switches	Rated voltage - 110 kV Rated current - 3150A	set 3 phases	10
Disconnecter 110 kV with one earthing switch	Rated voltage - 110 kV Rated current - 2000A	set 3 phases	60
Disconnecter 35 kV with two earthing switches	Rated voltage - 35 kV Rated current - 2000A	set 3 phases	3
Disconnecter 35 kV with one earthing switch	Rated voltage - 35 kV Rated current - 2000A	set 3 phases	9
Current transformer 750 kV	SF6-filled Rated voltage - 750 kV Transformer ratio - 4000-3000-2000-1500/1 Accuracy class - 0,2S/0,2S/10P/10P/10P/10P	phase	5
Current transformer 750 kV	SF6-filled Rated voltage - 750 kV Transformer ratio 4000-2000/1 Accuracy class - 0,2S/0,2S/10P/10P/10P/10P	phase	4
Current transformer 330 kV	SF6-filled Rated voltage - 330 kV Transformer ratio - 2000/1 Accuracy class - 0,2S/0,2S/10P/10P/10P/10P	phase	41
Current transformer 330 kV	SF6-filled Rated voltage - 330 kV Transformer ratio - 2000/5 Accuracy class - 0,2S/0,2S/10P/10P/10P/10P	phase	9
Current transformer 220 kV	SF6-filled Rated voltage - 220 kV Transformer ratio - 1200/1 Accuracy class - 0,5/10P/10P/10P	phase	3
Current transformer 220 kV	SF6-filled Rated voltage - 220 kV Transformer ratio - 600/5 Accuracy class - 0,5/10P/10P/10P	phase	6
Current transformer 220 kV	SF6-filled Rated voltage - 220 kV Transformer ratio - 600-1200/5 Accuracy class - 0,5/10P/10P/10P	phase	6
Current transformer 150 kV	SF6-filled Rated voltage - 150 kV Transformer ratio - 1200/5 Accuracy class - 0,5/10P/10P/10P	phase	30
Current transformer 110 kV	SF6-filled Rated voltage - 110 kV Transformer ratio - 750-1500/1 Accuracy class - 0,5/10P/10P/10P	phase	31
Current transformer 110 kV	SF6-filled Rated voltage - 110 kV Transformer ratio - 1500/5 Accuracy class - 0,5/10P/10P/10P	phase	12
Current transformer 110 kV	SF6-filled Rated voltage - 110 kV Transformer ratio - 600-1000/5 Accuracy class - 0,5/10P/10P/10P	phase	12
Current transformer 35 kV	Solid isolation Rated voltage - 35 kV Transformer ratio - 1500/5 Accuracy class - 0,5/10P/10P/10P	set 3 phases	3
Voltage transformer 35 kV	Rated voltage - 35 kV	set 3 phases	1
Voltage transformer 110 kV	SF6-filled Rated voltage - 110 kV	phase	12
Voltage transformer 150 kV	SF6-filled Rated voltage - 150 kV	phase	3
Voltage transformer 220 kV	SF6-filled Rated voltage - 220 kV	phase	18

Voltage transformer 330 kV	SF6-filled Rated voltage - 330 kV	phase	13	
Voltage transformer 750 kV	SF6-filled Rated voltage - 750 kV	phase	4	
Surge Arrester 750 kV	Rated voltage Surge Arrester (Ur) - 612 kV Line discharge class - 3	set 3 phases	5	
Surge Arrester 330 kV	Rated voltage Surge Arrester (Ur) - 288 kV Line discharge class - 2	set 3 phases	19	
Surge Arrester 220 kV	Rated voltage Surge Arrester (Ur) - 192 kV Line discharge class - 2	set 3 phases	5	
Surge Arrester 150 kV	Rated voltage Surge Arrester (Ur) - 138 kV Line discharge class - 3	set 3 phases	11	
Surge Arrester 110 kV	Rated voltage Surge Arrester (Ur) - 108 kV Line discharge class - 2	set 3 phases	12	
Surge Arrester 35 kV	Rated voltage Surge Arrester (Ur) - 37,5 kV Line discharge class - 2	set 3 phases	7	
Surge Arrester 6 kV	Rated voltage Surge Arrester (Ur) - 6,3 kV Line discharge class - 2	set 3 phases	2	
Battery	Battery voltage - 230 B Elements voltage - 2 B Capacity - 620 Ah Service life - not less than 20 years	set	1	
Battery	Battery voltage - 230 B Elements voltage - 2 B Capacity - 450 Ah Service life - not less than 20 years	set	3	
Battery	Battery voltage - 230 B Elements voltage - 2 B Capacity - 500 Ah Service life - not less than 20 years	set	4	
Battery	Battery voltage - 230 B Elements voltage - 2 B Capacity - 375 Ah Service life - not less than 20 years	set	2	
High-voltage bushings 750 kV	Ун.п.= 800 кВ; Iном=2500А	phase	3	
High-voltage bushings 330 kV	Rated voltage=363 кВ; rated current=2000А (type ГМТПА-45-330/2000 )	phase	1	
High-voltage bushings 330 kV	Rated voltage=363 кВ; rated current=1000А (type ГБМТП-45-330/1000 У1 )	phase	1	
High-voltage bushings 330 kV	Rated voltage.=363 кВ; rated current=2000А (type ГМТПА(Б)-45-330/2000)	phase	4	
High-voltage bushings 330 kV	Rated voltage =363 кВ; rated current=1000А (type ГМТПА(Б)-45-330/1000 У1)	phase	6	
High-voltage bushings 330 kV	Rated voltage =363 кВ; rated current=1600А (type GSB-362/1600/0,6-В )	phase	3	
DSO & Generation (DTEK & other private operators)	Current transformer	2000/1, U=330 kV, accuracy class 0.2S, IEC 61869	pcs.	27
	Current transformer	1200/1, U=220 kV, accuracy class 0.2S, IEC 61869	pcs.	10
	Current transformer	1200/5, U=154 kV, accuracy class 0.2S, IEC 61869	pcs.	16
	Current transformer	750-1500/5, U=110 kV, accuracy class 0.2S, IEC 61869	pcs.	19
	Voltage transformer	U1=400/√3 kV, U2=100/√3 V, accuracy class 0,2, IEC 61869	pcs.	3
	Voltage transformer	U1=330/√3 kV, U2=100/√3 V, accuracy class 0,2, IEC 61869	pcs.	6
	Voltage transformer	U1=220/√3 kV, U2=100/√3 V, accuracy class 0,2, IEC 61869	pcs.	3
	Voltage transformer	U1=150/√3 kV, U2=100/√3 V, accuracy class 0,2, IEC 61869	pcs.	3
	Voltage transformer	U1=110/√3 kV, U2=100/√3 V, accuracy class 0,2, IEC 61869	pcs.	3

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Circuit breakers	SF6 LTB	pcs.	13
Circuit breakers	SF6 HPL245	pcs.	5
Circuit breakers	SF6 LTB 170D1/154kV/3150/40kA	pcs.	6
Circuit breakers	SF6 HPL145B1/110kV/4000A/40kA	pcs.	7
Disconnectors	4000 A - 160 kA peak - 63 kA/3sec (various voltage class)	pcs.	51
Disconnectors	3150 A - 125 kA peak - 50 kA/3sec.	pcs.	20
Bushings for AT	(RIP bushings with silicone composite insulator): 400 kV	pcs.	9
Bushings for AT	(RIP bushings with silicone composite insulator): 245 kV	pcs.	7
Surge Arresters	330 kV Surge Arresters EXLIM, or similar	pcs.	72
Surge Arresters	220 kV Surge Arresters EXLIM, or similar	pcs.	30
Surge Arresters	150 kV Surge Arresters EXLIM, or similar	pcs.	39
Surge Arresters	110 kV Surge Arresters EXLIM, or similar	pcs.	27
Transformer Oil	(T-1500 or similar oil)	kg	60000
Generators	Generator 200 MW	pcs.	1
Generators	Generator 300 MW	pcs.	1
Generator thyristor system	Generator thyristor system	pcs.	1
Turbines	Steam turbine 200 MW	pcs.	1
Turbines	Steam turbine 300 MW	pcs.	1
Engines	Electric motor of feeder pump 8 MW	pcs.	1
Engines	Electric motor of the ejection pump 200 kW	pcs.	1
Engines	Electric motor of flush pump 250 kW	pcs.	2
Engines	Electric motor of the condensate pump 500 kW	pcs.	3
Engines	Electric motor of desalting pump 250 kW	pcs.	3
Power transformer	Power transformer 400 MVA/330 kV	pcs.	1
Power transformer	Power transformer 32 MVA / 20 kV / 6 kV	pcs.	1
Power transformer	Power transformer 3.2 MVA / 20 kV / 420 V	pcs.	1
Power transformer	Three-phase transformer 250 MVA	pcs.	1
Power transformer	Transformer 6/0.4 kV	pcs.	3
Control system	Control system	pcs.	1
Mobile substation	154 (110) kV (40 MVA transformer + set of switchgear 110, 35, 10, 6 kV)	pcs.	3
Complete secondary substation	(2x630 kVA) with transformers	pcs.	30
Power transformer	63 MVA 150/35/10 kV	pcs.	1
Power transformer	40 MVA 150/35/10 kV	pcs.	2
Power transformer	25 MVA 150/10/6 kV	pcs.	1
Power transformer	80 MVA 110/35/10 kV	pcs.	1
Power transformer	63 MVA 110/10/10 kV	pcs.	1
Power transformer	63 MVA 110/35/10 kV	pcs.	4
Power transformer	40 MVA 110/35/10 kV	pcs.	3
Power transformer	40 MVA 110/10/10 kV	pcs.	1

Power transformer	25 MVA 110/35/10 kV	pcs.	2
Power transformer	25 MVA 110/10/10 kV	pcs.	1
Power transformer	16 MVA 110/35/10 kV	pcs.	2
Power transformer	10 MVA 110/35/10 kV	pcs.	2
Power transformer	16 MVA 35/10 kV	pcs.	2
Power transformer	10 MVA 35/10 kV	pcs.	4
Power transformer	16 MVA 110/6 kV	pcs.	2
Power transformer	4 MVA 110/10 kV	pcs.	2
Power transformer	6,3 MVA 35/10 kV	pcs.	1
Power transformer	4 MVA 35/10 kV	pcs.	1
Circuit breaker	Electric and gas switch 110 kV	pcs.	6
Circuit breaker	Vacuum switch 35 kV	pcs.	4
Transformer Oil	Transformer oil Nytro 11 GX	tones	144
Medium Voltage Transition Joint	(POLJ 24) 1x120 - 1x800 mm	pcs.	754
Power Cable Termination	(POLT 24) 1x120 - 1x800 mm	pcs.	502
Conical reinforced concrete pole for OHL	(22m)	pcs.	16
Power Cable 6-10 kV	with XLPE Isolation 1x120 - 1x800 mm	km	102
Steel-aluminum wire	120-400 mm <sup>2</sup>	tones	567