

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 18, 2021
Hours: 18:00 Hours

Date	Time	Load(MW)
12-Dec-21	18:00hrs	472.23

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Line - I	0.00	Unit-I, II & III under Annual Maintenance & Unit-V on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line II on Standby
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	78.42	
		Unit- IV	117.26	400kV THP - Malbase Line - III	175.08	
		Unit- V	0.00	400kV Malbase - Siliguri Line	58.11	
		Unit- VI	138.62	-	-	
		Total	255.88	Auxiliary Consumption & Transformation Losses at Generator end	0.93%	
2	720MW MHP	Unit-I	144.95	400kV MHP - Jigmeling Line - I	143.61	Unit-II & III on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & III on standby. 400kV MHP-JLG Line IV under Annual Maintenance. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	94.59	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	14.02	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	22.49	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.37	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.75	
		-	-	220kV Tsirang - Jigmeling Line	-32.08	
-	-	132kV Gelephu - Salakati Line	0.45			
Total	144.95	Auxiliary Consumption & Transformation Losses at Generator end	0.92%			
3	336MW CHP	Unit- I	68.20	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit IV under Annual Maintenance. 220kV CHP_Birpara Line I on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	4.99	
		Unit- III	67.23	220kV CHP - Malbase Line- III	26.92	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	77.37	
		-	-	220kV Malbase - Birpara Line	-13.15	
		-	-	66kV CHP - Chumdo Line	21.41	
		-	-	66kV CHP - Gedu Line	2.38	
		-	-	3x3MVA, 66/11kV TFR	2.02	
Total	135.43	Auxiliary Consumption & Transformation Losses at Generator end	0.25%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	57.30	U/S Unit I on Standby.
		Unit- II	9.90	66kV BHP - Lobeyasa Line	29.85	
		Total	9.90	220kV BHP - Tsirang Line	-60.18	
5	40MW BHP (L/S)	Unit- I	9.80	5MVA, 66/11kV TFR	1.06	U/S Unit I on Standby.
		Unit- II	9.80	30MVA ICT, 220/66kV (HV)	21.29	
		Total	19.60	Auxiliary Consumption & Transformation Losses at Generator end	4.98%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	33.80	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	33.99	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.94	
		-	-	5MVA, 220/33kV TFR	0.15	
Total	33.99	Auxiliary Consumption & Transformation Losses at Gen. end	0.12%			
7	60MW KHP	Unit- I	13.60	132kV KHP - Nangkhoh Line	7.78	Unit II on standby. Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	18.48	
		Unit- III	13.59	5MVA, 132/11kV TFR	0.55	
		Unit- IV	0.00	132kV Motanga - Rangia Line	3.24	
		Total	27.19	Auxiliary Consumption & Transformation Losses at Generator end	1.42%	

Note: Generation-Load Summary (MW) for December 18, 2021 at 18:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	454.80	358.51	354.28	128.37	4.23
2	Eastern Grid	172.14	99.86	98.14	40.20	1.72
Total		626.94	458.37	452.42	168.57	5.95

Note: Generation-Load Summary for December 18, 2020 at 18:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	382.31	230.31	216.67	152.00	13.64
2	Eastern Grid	158.69	61.62	59.87	118.46	1.75
Total		541.00	291.93	276.54	270.46	15.39

NOTE- BHP,MHP and KHP data collected from site.

1. The Instantaneous load balance,calculated as (Total generation - (Total export-Import) - Total domestic load), do not tend towards zero. This could be due to the following reasons:

- i) Not all the meters are digital and nor are all the meter at all locations can be read at same time (say 9:00hrs) due to many meter to be read manually.
- ii) The clocks of all the locations are not synchronized.

2. This report is generated to give an idea of the generation & load flow for the system at a particular instant.

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 19, 2021
Hours: 09:00 Hours

Date	Time	Load(MW)
12-Dec-21	18:00hrs	472.23

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Line - I	0.00	Unit-I, II & III under Annual Maintenance & Unit-V on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line II under Standby
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	84.22	
		Unit- IV	119.15	400kV THP - Malbase Line - III	171.77	
		Unit- V	0.00	400kV Malbase - Siliguri Line	65.51	
		Unit- VI	139.35	-	-	
		Total	258.50	Auxiliary Consumption & Transformation Losses at Generator end	0.97%	
2	720MW MHP	Unit-I	143.23	400kV MHP - Jigmeling Line - I	142.09	Unit-II & III on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & III on standby. 400kV MHP-JLG Line IV under Annual Maintenance. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. JLG_ALI Line I (Direct) under standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	74.76	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	25.95	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	40.40	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.91	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.21	
		-	-	220kV Tsirang - Jigmeling Line	-17.91	
-	-	132kV Gelephu - Salakati Line	5.30			
Total	143.23	Auxiliary Consumption & Transformation Losses at Generator end	0.80%			
3	336MW CHP	Unit- I	73.10	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line-I on standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	10.00	
		Unit- III	72.27	220kV CHP - Malbase Line- III	45.27	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	70.22	
		-	-	220kV Malbase - Birpara Line	-18.29	
		-	-	66kV CHP - Chumdo Line	15.55	
		-	-	66kV CHP - Gedu Line	2.84	
		-	-	3x3MVA, 66/11kV TFR	1.68	
Total	145.37	Auxiliary Consumption & Transformation Losses at Generator end	-0.13%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	48.80	U/S Unit-I on standby.
		Unit- II	9.60	66kV BHP - Lobeyasa Line	26.23	
		Total	9.60	220kV BHP - Tsirang Line	-46.95	
5	40MW BHP (L/S)	Unit- I	9.50	5MVA, 66/11kV TFR	0.56	
		Unit- II	9.50	30MVA ICT, 220/66kV (HV)	17.43	
		Total	19.00	Auxiliary Consumption & Transformation Losses at Generator end	-0.14%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	33.20	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	33.39	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.07	
		-	-	5MVA, 220/33kV TFR		
Total	33.39	Auxiliary Consumption & Transformation Losses at Generator end	0.57%			
7	60MW KHP	Unit- I	12.10	132kV KHP - Nangkhoh Line	9.33	Unit-II on Standby. Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	14.11	
		Unit- III	12.12	5MVA, 132/11kV TFR	0.50	
		Unit- IV	0.00	132kV Motanga - Rangia Line	2.57	
		Total	24.22	Auxiliary Consumption & Transformation Losses at Generator end	1.16%	

Note: Generation-Load Summary (MW) for December 19, 2021 at 09:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	465.86	342.33	339.86	141.44	2.47
2	Eastern Grid	167.45	75.32	73.90	74.22	1.42
Total		633.31	417.65	413.76	215.66	3.89

Note: Generation-Load Summary for December 19, 2020 at 09:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	376.74	241.51	237.81	122.11	3.70
2	Eastern Grid	163.50	54.25	52.82	122.37	1.43
Total		540.24	295.76	290.63	244.48	5.13

NOTE- BHP data collected from site.

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