

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	October 1, 2022
Hours:	19:00 Hours

Date	Time	Load(MW)
30-Aug-22	19:23 hrs	536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	145.32	400kV THP - Siliguri Line - I	172.80	
		Unit- II	157.91	400kV THP - Siliguri Line - II	171.60	
		Unit- III	108.42	400kV THP - Siliguri Line - IV	167.86	
		Unit- IV	80.35	400kV THP - Malbase Line - III	240.71	
		Unit- V	137.08	400kV Malbase - Siliguri Line	149.70	
		Unit- VI	130.51	-	-	
		Total	759.59	Auxiliary Consumption & Transformation Losses at Generator end	0.87%	
2	720MW MHP	Unit-I	110.19	400kV MHP - Jigmeling Line - I	191.10	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	130.20	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	100.61	400kV MHP - Jigmeling Line - III	192.37	
		Unit-IV	130.58	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	83.63	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	45.43	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	83.52	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	126.03	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	124.98	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.87	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.25	
		-	-	220kV Tsirang - Jigmeling Line	-6.30	
-	-	132kV Gelephu - Salakati Line	23.64			
Total	471.58	Auxiliary Consumption & Transformation Losses at Generator end	0.95%			
3	336MW CHP	Unit- I	90.57	220kV CHP - Birpara Line- I	72.53	
		Unit- II	91.43	220kV CHP - Birpara Line- II	72.12	
		Unit- III	91.08	220kV CHP - Malbase Line- III	108.50	
		Unit- IV	75.67	220kV CHP - Semtokha Line- IV	70.42	
		-	-	220kV Malbase - Birpara Line	34.55	
		-	-	66kV CHP - Chumdo Line	17.44	
		-	-	66kV CHP - Gedu Line	5.40	
		-	-	3x3MVA, 66/11kV TFR	1.50	
Total	348.75	Auxiliary Consumption & Transformation Losses at Generator end	0.24%			
4	24MW BHP (U/S)	Unit- I	11.60	220kV BHP - Semtokha Line	37.20	
		Unit- II	11.30	66kV BHP - Lobeyasa Line	26.06	
		Total	22.90	220kV BHP - Tsirang Line	-3.79	
5	40MW BHP (L/S)	Unit- I	19.20	5MVA, 66/11kV TFR	0.64	
		Unit- II	19.10	30MVA ICT, 220/66kV (HV)	4.50	
		Total	38.30	Auxiliary Consumption & Transformation Losses at Generator end	1.78%	
6	126MW DHP	Unit-I	33.35	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	32.02	220kV DHP - Dagapela Line	64.89	
		-	-	220kV Jigmeling - Dagapela Line	-2.90	
		-	-	5MVA, 220/33kV TFR	0.35	
Total	65.37	Auxiliary Consumption & Transformation Losses at Gen. end	0.20%			
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhoh Line	35.82	
		Unit-II	16.54	132kV KHP - Kilikhar Line	28.98	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.78	
		Unit- IV	16.68	132kV Motanga - Rangia Line	59.04	
		Total	66.21	Auxiliary Consumption & Transformation Losses at Generator end	0.95%	

Note: Generation-Load Summary (MW) for October 01, 2022 at 19:00hrs.

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	1,234.91	397.15	388.47	841.16	8.68
2	Eastern Grid	537.79	117.18	112.07	417.21	5.11
Total		1,772.70	514.33	500.54	1,258.37	13.79

Note: Generation-Load Summary for October 01, 2021 at 19:00hrs.

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	933.20	313.66	306.53	615.82	7.13
2	Eastern Grid	506.47	75.67	73.85	434.52	1.82
Total		1,439.67	389.33	380.38	1,050.34	8.95

NOTE- MAT 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: October 2, 2022
Hours: 09:00 Hours

Date: 30-Aug-22 **Time:** 19:23 hrs **Load(MW):** 536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	145.83	400kV THP - Siliguri Line - I	154.91	
		Unit- II	68.32	400kV THP - Siliguri Line - II	152.66	
		Unit- III	109.74	400kV THP - Siliguri Line- IV	150.10	
		Unit- IV	80.48	400kV THP - Malbase Line - III	209.42	
		Unit- V	137.37	400kV Malbase - Siliguri Line	136.62	
		Unit- VI	129.77	-	-	
		Total	671.51	Auxiliary Consumption & Transformation Losses at Generator end	0.66%	
2	720MW MHP	Unit-I	110.14	400kV MHP - Jigmeling Line - I	204.12	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	130.09	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	110.68	400kV MHP - Jigmeling Line - III	205.64	
		Unit-IV	130.48	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	67.63	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	33.52	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	90.08	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	136.08	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	135.28	
		-	-	80MVA, 220/132kV ICT - I (HV)	14.36	
		-	-	80MVA, 220/132kV ICT - II (HV)	14.67	
		-	-	220kV Tsirang - Jigmeling Line	-7.83	
-	-	132kV Gelephu - Salakati Line	20.20			
Total	481.39	Auxiliary Consumption & Transformation Losses at Generator end	0.83%			
3	336MW CHP	Unit- I	91.89	220kV CHP - Birpara Line- I	46.53	
		Unit- II	0.00	220kV CHP - Birpara Line- II	46.19	
		Unit- III	91.28	220kV CHP - Malbase Line- III	87.40	
		Unit- IV	75.60	220kV CHP - Semtokha Line- IV	58.60	
		-	-	220kV Malbase - Birpara Line	8.09	
		-	-	66kV CHP - Chumdo Line	14.68	
		-	-	66kV CHP - Gedu Line	3.88	
		-	-	3x3MVA, 66/11kV TFR	1.05	
Total	258.77	Auxiliary Consumption & Transformation Losses at Generator end	0.17%			
4	24MW BHP (U/S)	Unit- I	10.70	220kV BHP - Semtokha Line	40.30	
		Unit- II	10.40	66kV BHP - Lobeyssa Line	23.80	
		Total	21.10	220kV BHP - Tsirang Line	-6.81	
5	40MW BHP (L/S)	Unit- I	18.50	5MVA, 66/11kV TFR	0.38	
		Unit- II	18.50	30MVA ICT, 220/66kV (HV)	3.58	
		Total	37.00	Auxiliary Consumption & Transformation Losses at Generator end	0.74%	
6	126MW DHP	Unit-I	31.34	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	32.51	220kV DHP - Dagapela Line	63.41	
		-	-	220kV Jigmeling - Dagapela Line	-2.15	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	63.85	Auxiliary Consumption & Transformation Losses at Generator end	0.22%			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	41.44	
		Unit-II	16.50	132kV KHP - Kilikhar Line	23.83	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.51	
		Unit- IV	16.50	132kV Motanga - Rangia Line	45.05	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Generator end	0.33%	

Note: Generation-Load Summary (MW) for October 02, 2022 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	1,052.23	362.81	357.38	695.10	5.43
2	Eastern Grid	547.39	115.02	110.80	426.69	4.22
Total		1,599.62	477.83	468.18	1,121.79	9.65

Note: Generation-Load Summary for October 02, 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	1,304.62	313.57	305.66	979.09	7.91
2	Eastern Grid	511.66	44.10	42.01	479.52	2.09
Total		1,816.28	357.67	347.67	1,458.61	10.00

Notes: Eastern 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.