

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: September 29, 2022
Hours: 19:00 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	184.44	400kV THP - Siliguri Line - I	202.23	
		Unit- II	155.00	400kV THP - Siliguri Line - II	202.46	
		Unit- III	79.15	400kV THP - Siliguri Line - IV	196.61	
		Unit- IV	80.42	400kV THP - Malbase Line - III	261.77	
		Unit- V	186.63	400kV Malbase - Siliguri Line	181.74	
		Unit- VI	185.46	-	-	
		Total	871.10	Auxiliary Consumption & Transformation Losses at Generator end	0.92%	
2	720MW MHP	Unit-I	160.18	400kV MHP - Jigmeling Line - I	254.51	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	160.25	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.49	400kV MHP - Jigmeling Line - III	256.08	
		Unit-IV	150.66	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	89.69	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	43.22	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	115.62	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	173.76	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	172.86	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.55	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.97	
		-	-	220kV Tsirang - Jigmeling Line	-10.79	
-	-	132kV Gelephu - Salakati Line	26.56			
Total	606.58	Auxiliary Consumption & Transformation Losses at Generator end	1.04%			
3	336MW CHP	Unit- I	91.85	220kV CHP - Birpara Line- I	76.93	
		Unit- II	91.27	220kV CHP - Birpara Line- II	76.71	
		Unit- III	91.67	220kV CHP - Malbase Line- III	105.08	
		Unit- IV	75.60	220kV CHP - Semtokha Line- IV	64.96	
		-	-	220kV Malbase - Birpara Line	44.99	
		-	-	66kV CHP - Chumdo Line	17.04	
		-	-	66kV CHP - Gedu Line	7.38	
		-	-	3x3MVA, 66/11kV TFR	1.62	
Total	350.39	Auxiliary Consumption & Transformation Losses at Generator end	0.19%			
4	24MW BHP (U/S)	Unit- I	11.60	220kV BHP - Semtokha Line	44.70	
		Unit- II	11.30	66kV BHP - Lobeyasa Line	26.47	
		Total	22.90	220kV BHP - Tsirang Line	-7.71	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.65	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	4.50	
		Total	41.70	Auxiliary Consumption & Transformation Losses at Generator end	0.76%	
6	126MW DHP	Unit-I	36.84	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	36.50	220kV DHP - Dagapela Line	72.89	
		-	-	220kV Jigmeling - Dagapela Line	-10.54	
		-	-	5MVA, 220/33kV TFR	0.44	
Total	73.34	Auxiliary Consumption & Transformation Losses at Gen. end	0.01%			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhor Line	34.95	
		Unit-II	16.54	132kV KHP - Kilikhar Line	29.70	
		Unit- III	16.43	5MVA, 132/11kV TFR	0.90	
		Unit- IV	16.56	132kV Motanga - Rangia Line	57.92	
		Total	66.03	Auxiliary Consumption & Transformation Losses at Generator end	0.73%	

Note: Generation-Load Summary (MW) for September 29, 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	1,359.43	378.01	368.81	981.67	9.20
2	Eastern Grid	672.61	125.64	118.86	546.72	6.78
Total		2,032.04	503.65	487.67	1,528.39	15.98

Note: Generation-Load Summary for September 29, 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	1,427.28	294.75	286.70	1,126.06	8.05
2	Eastern Grid	562.84	68.35	64.16	500.96	4.19
Total		1,990.12	363.10	350.86	1,627.02	12.24

NOTE- All 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: September 30, 2022
Hours: 09:00 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	145.57	400kV THP - Siliguri Line - I	184.52	
		Unit- II	159.09	400kV THP - Siliguri Line - II	184.46	
		Unit- III	79.69	400kV THP - Siliguri Line - IV	180.10	
		Unit- IV	79.68	400kV THP - Malbase Line - III	225.49	
		Unit- V	157.14	400kV Malbase - Siliguri Line	168.47	
		Unit- VI	159.12	-	-	
		Total	780.29	Auxiliary Consumption & Transformation Losses at Generator end	0.73%	
2	720MW MHP	Unit-I	140.21	400kV MHP - Jigmeling Line - I	238.37	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	140.20	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.47	400kV MHP - Jigmeling Line - III	239.73	
		Unit-IV	140.13	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	76.36	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	26.02	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	111.20	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	166.51	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	167.14	
		-	-	80MVA, 220/132kV ICT - I (HV)	15.79	
		-	-	80MVA, 220/132kV ICT - II (HV)	16.08	
		-	-	220kV Tsirang - Jigmeling Line	-0.39	
		-	-	132kV Gelephu - Salakati Line	19.20	
Total	556.01	Auxiliary Consumption & Transformation Losses at Generator end	0.28%			
3	336MW CHP	Unit- I	91.33	220kV CHP - Birpara Line- I	70.03	
		Unit- II	91.41	220kV CHP - Birpara Line- II	69.87	
		Unit- III	91.46	220kV CHP - Malbase Line- III	123.51	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	62.84	
		-	-	220kV Malbase - Birpara Line	19.43	
		-	-	66kV CHP - Chumdo Line	13.30	
		-	-	66kV CHP - Gedu Line	8.46	
		-	-	3x3MVA, 66/11kV TFR	0.93	
Total	349.46	Auxiliary Consumption & Transformation Losses at Generator end	0.15%			
4	24MW BHP (U/S)	Unit- I	11.20	220kV BHP - Semtokha Line	36.30	
		Unit- II	10.90	66kV BHP - Lobeysa Line	24.09	
		Total	22.10	220kV BHP - Tsirang Line	0.74	
5	40MW BHP (L/S)	Unit- I	20.10	5MVA, 66/11kV TFR	0.39	
		Unit- II	20.10	30MVA ICT, 220/66kV (HV)	2.95	
		Total	40.20	Auxiliary Consumption & Transformation Losses at Generator end	1.25%	
6	126MW DHP	Unit-I	34.85	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	34.02	220kV DHP - Dagapela Line	68.43	
		-	-	220kV Jigmeling - Dagapela Line	-7.11	
		-	-	5MVA, 220/33kV TFR	0.42	
Total	68.87	Auxiliary Consumption & Transformation Losses at Generator end	0.03%			
7	60MW KHP	Unit- I	16.57	132kV KHP - Nangkhoh Line	39.99	
		Unit-II	16.51	132kV KHP - Kilikhar Line	24.84	
		Unit- III	16.54	5MVA, 132/11kV TFR	0.64	
		Unit- IV	16.59	132kV Motanga - Rangia Line	52.86	
		Total	66.21	Auxiliary Consumption & Transformation Losses at Generator end	1.12%	

Note: Generation-Load Summary (MW) for September 30, 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	1,260.92	377.32	370.28	876.88	7.04
2	Eastern Grid	622.22	112.03	109.74	516.91	2.29
Total		1,883.14	489.35	480.02	1,393.79	9.33

Note: Generation-Load Summary for September 30, 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	1,329.27	300.82	294.24	1,007.70	6.58
2	Eastern Grid	572.89	48.39	46.13	545.25	2.26
Total		1,902.16	349.21	340.37	1,552.95	8.84

Notes: BHP & 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.