

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: September 5, 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	185.46	400kV THP - Siliguri Line - I	261.67	
		Unit- II	184.48	400kV THP - Siliguri Line - II	261.34	
		Unit- III	185.69	400kV THP - Siliguri Line - IV	254.13	
		Unit- IV	184.66	400kV THP - Malbase Line - III	327.06	
		Unit- V	185.26	400kV Malbase - Siliguri Line	235.99	
		Unit- VI	184.91	-	-	
		Total	1,110.46	Auxiliary Consumption & Transformation Losses at Generator end	0.56%	
2	720MW MHP	Unit-I	196.85	400kV MHP - Jigmeling Line - I	359.72	400kV MHP-JLG Line II & III on Standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	197.60	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.42	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	196.30	400kV MHP - Jigmeling Line - IV	361.30	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	77.43	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	159.33	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	239.28	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	237.84	
		-	-	80MVA, 220/132kV ICT - I (HV)	37.11	
		-	-	80MVA, 220/132kV ICT - II (HV)	37.85	
		-	-	220kV Tsirang - Jigmeling Line	-19.81	
-	-	132kV Gelephu - Salakati Line	11.40			
Total	726.17	Auxiliary Consumption & Transformation Losses at Generator end	0.71%			
3	336MW CHP	Unit- I	92.07	220kV CHP - Birpara Line- I	76.52	
		Unit- II	91.25	220kV CHP - Birpara Line- II	76.21	
		Unit- III	91.30	220kV CHP - Malbase Line- III	121.62	
		Unit- IV	75.46	220kV CHP - Semtokha Line- IV	45.12	
		-	-	220kV Malbase - Birpara Line	30.54	
		-	-	66kV CHP - Chumdo Line	15.36	
		-	-	66kV CHP - Gedu Line	5.64	
		-	-	3x3MVA, 66/11kV TFR	1.50	
Total	350.08	Auxiliary Consumption & Transformation Losses at Generator end	2.32%			
4	24MW BHP (U/S)	Unit- I	11.70	220kV BHP - Semtokha Line	53.80	
		Unit- II	11.50	66kV BHP - Lobeysa Line	27.13	
		Total	23.20	220kV BHP - Tsirang Line	-17.54	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.70	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	5.28	
		Total	41.60	Auxiliary Consumption & Transformation Losses at Generator end	1.10%	
6	126MW DHP	Unit-I	37.37	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	37.01	220kV DHP - Dagapela Line	73.92	
		-	-	220kV Jigmeling - Dagapela Line	-18.66	
		-	-	5MVA, 220/33kV TFR	0.45	
Total	74.38	Auxiliary Consumption & Transformation Losses at Gen. end	0.01%			
7	60MW KHP	Unit- I	16.38	132kV KHP - Nangkhon Line	37.35	
		Unit-II	16.55	132kV KHP - Kilikhar Line	27.29	
		Unit- III	16.43	5MVA, 132/11kV TFR	0.60	
		Unit- IV	16.49	132kV Motanga - Rangia Line	43.46	
		Total	65.85	Auxiliary Consumption & Transformation Losses at Generator end	0.93%	

Note: Generation-Load Summary (MW) for September 05, 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	1,599.72	404.47	389.38	1,196.40	15.09
2	Eastern Grid	792.02	99.56	93.80	691.31	5.76
Total		2,391.74	504.03	483.18	1,887.71	20.85

Note: Generation-Load Summary for September 05, 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	1,669.05	285.20	276.57	1,293.25	8.63
2	Eastern Grid	856.29	85.23	79.51	861.66	5.72
Total		2,525.34	370.43	356.08	2,154.91	14.35

NOTE- SAL & MAT data collected from site.

- 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:
 - 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.
 - The clocks of all the locations are not synchronized.
- 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 6, 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	185.59	400kV THP - Siliguri Line - I	229.54	
		Unit- II	184.20	400kV THP - Siliguri Line - II	227.92	
		Unit- III	128.10	400kV THP - Siliguri Line- IV	220.60	
		Unit- IV	138.34	400kV THP - Malbase Line - III	264.03	
		Unit- V	126.98	400kV Malbase - Siliguri Line	209.63	
		Unit- VI	184.60	-	-	
		Total	947.81	Auxiliary Consumption & Transformation Losses at Generator end	0.60%	
2	720MW MHP	Unit-I	197.88	400kV MHP - Jigmeling Line - I	360.36	400kV MHP-JLG Line II & III under standby 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	197.96	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.46	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	197.22	400kV MHP - Jigmeling Line - IV	362.26	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	40.73	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	168.90	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	253.26	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	251.73	
		-	-	80MVA, 220/132kV ICT - I (HV)	27.50	
		-	-	80MVA, 220/132kV ICT - II (HV)	27.95	
		-	-	220kV Tsirang - Jigmeling Line	20.75	
-	-	132kV Gelephu - Salakati Line	3.60			
Total	728.52	Auxiliary Consumption & Transformation Losses at Generator end	0.81%			
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	78.23	
		Unit- II	91.18	220kV CHP - Birpara Line- II	78.07	
		Unit- III	91.58	220kV CHP - Malbase Line- III	141.07	
		Unit- IV	76.21	220kV CHP - Semtokha Line- IV	45.12	
		-	-	220kV Malbase - Birpara Line	19.53	
		-	-	66kV CHP - Chumdo Line	11.41	
		-	-	66kV CHP - Gedu Line	5.99	
		-	-	3x3MVA, 66/11kV TFR	0.96	
Total	350.37	Auxiliary Consumption & Transformation Losses at Generator end	-2.99%			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	59.10	
		Unit- II	12.20	66kV BHP - Lobeyasa Line	25.31	
		Total	24.50	220kV BHP - Tsirang Line	-19.31	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.37	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	1.84	
		Total	41.70	Auxiliary Consumption & Transformation Losses at Generator end	1.10%	
6	126MW DHP	Unit-I	45.39	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	45.07	220kV DHP - Dagapela Line	89.95	
		-	-	220kV Jigmeling - Dagapela Line	-34.53	
		-	-	5MVA, 220/33kV TFR		
Total	90.46	Auxiliary Consumption & Transformation Losses at Generator end	0.56%			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	42.68	
		Unit-II	16.50	132kV KHP - Kilikhar Line	22.37	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.32	
		Unit- IV	16.50	132kV Motanga - Rangia Line	25.33	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Generator end	0.95%	

Note: Generation-Load Summary (MW) for September 06, 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	1,454.84	336.04	339.56	1,063.52	-3.52
2	Eastern Grid	794.52	146.98	140.45	702.82	6.53
Total		2,249.36	483.02	480.01	1,766.34	3.01

Note: Generation-Load Summary for September 06, 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	1,673.87	303.55	293.69	1,280.19	9.86
2	Eastern Grid	854.17	71.57	66.47	872.73	5.10
Total		2,528.04	375.12	360.16	2,152.92	14.96

Notes: SAL & 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.