

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	October 8, 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	187.45	400kV THP - Siliguri Line - I	186.00	
		Unit- II	186.70	400kV THP - Siliguri Line - II	186.00	
		Unit- III	70.80	400kV THP - Siliguri Line - IV	179.00	
		Unit- IV	70.90	400kV THP - Malbase Line - III	235.00	
		Unit- V	99.30	400kV Malbase - Siliguri Line	165.09	
		Unit- VI	186.60	-	-	
		Total	801.75	Auxiliary Consumption & Transformation Losses at Generator end	1.96%	
2	720MW MHP	Unit-I	110.15	400kV MHP - Jigmeling Line - I	198.62	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	130.37	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	100.29	400kV MHP - Jigmeling Line - III	199.92	
		Unit-IV	130.83	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	69.81	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	4.04	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	97.02	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	146.53	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	146.10	
		-	-	80MVA, 220/132kV ICT - I (HV)	15.81	
		-	-	80MVA, 220/132kV ICT - II (HV)	16.05	
		-	-	220kV Tsirang - Jigmeling Line	-12.10	
-	-	132kV Gelephu - Salakati Line	17.28			
Total	471.64	Auxiliary Consumption & Transformation Losses at Generator end	0.70%			
3	336MW CHP	Unit- I	92.00	220kV CHP - Birpara Line- I	73.46	
		Unit- II	92.00	220kV CHP - Birpara Line- II	73.95	
		Unit- III	92.00	220kV CHP - Malbase Line- III	118.95	
		Unit- IV	76.00	220kV CHP - Semtokha Line- IV	61.17	
		-	-	220kV Malbase - Birpara Line	28.64	
		-	-	66kV CHP - Chumdo Line	7.20	
		-	-	66kV CHP - Gedu Line	5.20	
		-	-	3x3MVA, 66/11kV TFR	1.28	
Total	352.00	Auxiliary Consumption & Transformation Losses at Generator end	3.07%			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	47.30	
		Unit- II	12.10	66kV BHP - Lobeyssa Line	27.17	
		Total	24.40	220kV BHP - Tsirang Line	-9.64	
5	40MW BHP (L/S)	Unit- I	20.60	5MVA, 66/11kV TFR	0.56	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	3.90	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Generator end	1.22%	
6	126MW DHP	Unit-I	36.39	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	36.03	220kV DHP - Dagapela Line	71.96	
		-	-	220kV Jigmeling - Dagapela Line	-39.99	
		-	-	5MVA, 220/33kV TFR	0.13	
Total	72.42	Auxiliary Consumption & Transformation Losses at Gen. end	0.46%			
7	60MW KHP	Unit- I	16.60	132kV KHP - Nangkhor Line	38.16	
		Unit-II	16.55	132kV KHP - Kilikhar Line	26.91	
		Unit- III	16.59	5MVA, 132/11kV TFR	0.50	
		Unit- IV	16.53	132kV Motanga - Rangia Line	38.49	
		Total	66.27	Auxiliary Consumption & Transformation Losses at Generator end	1.06%	

Note: Generation-Load Summary (MW) for October 08, 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	1,292.37	372.34	344.66	892.14	27.68
2	Eastern Grid	537.91	120.38	116.39	445.42	3.99
Total		1,830.28	492.72	461.05	1,337.56	31.67

Note: Generation-Load Summary for October 08, 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	1,076.99	296.00	294.89	729.34	1.11
2	Eastern Grid	426.49	63.92	62.54	414.22	1.38
Total		1,503.48	359.92	357.43	1,143.56	2.49

NOTE- All West and 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 9, 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	183.99	400kV THP - Siliguri Line - I	269.67	
		Unit- II	184.88	400kV THP - Siliguri Line - II	268.36	
		Unit- III	184.39	400kV THP - Siliguri Line- IV	262.37	
		Unit- IV	183.61	400kV THP - Malbase Line - III	298.81	
		Unit- V	184.10	400kV Malbase - Siliguri Line	250.92	
		Unit- VI	185.00	-	-	
		Total	1,105.97	Auxiliary Consumption & Transformation Losses at Generator end	0.61%	
2	720MW MHP	Unit-I	149.93	400kV MHP - Jigmeling Line - I	250.87	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	139.79	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	130.49	400kV MHP - Jigmeling Line - III	252.65	
		Unit-IV	150.25	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	62.54	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-29.87	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	132.29	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	197.60	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	198.49	
		-	-	80MVA, 220/132kV ICT - I (HV)	11.73	
		-	-	80MVA, 220/132kV ICT - II (HV)	11.91	
		-	-	220kV Tsirang - Jigmeling Line	-8.70	
-	-	132kV Gelephu - Salakati Line	15.98			
Total	570.46	Auxiliary Consumption & Transformation Losses at Generator end	0.77%			
3	336MW CHP	Unit- I	91.45	220kV CHP - Birpara Line- I	78.04	
		Unit- II	91.33	220kV CHP - Birpara Line- II	77.92	
		Unit- III	91.59	220kV CHP - Malbase Line- III	124.52	
		Unit- IV	75.83	220kV CHP - Semtokha Line- IV	49.20	
		-	-	220kV Malbase - Birpara Line	30.25	
		-	-	66kV CHP - Chumdo Line	13.78	
		-	-	66kV CHP - Gedu Line	5.00	
		-	-	3x3MVA, 66/11kV TFR	1.02	
Total	350.20	Auxiliary Consumption & Transformation Losses at Generator end	0.21%			
4	24MW BHP (U/S)	Unit- I	11.90	220kV BHP - Semtokha Line	46.76	
		Unit- II	11.60	66kV BHP - Lobeysa Line	24.33	
		Total	23.50	220kV BHP - Tsirang Line	-7.18	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.43	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	1.84	
		Total	41.60	Auxiliary Consumption & Transformation Losses at Generator end	1.17%	
6	126MW DHP	Unit-I	47.41	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	48.03	220kV DHP - Dagapela Line	94.97	
		-	-	220kV Jigmeling - Dagapela Line	-63.02	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	95.44	Auxiliary Consumption & Transformation Losses at Generator end	0.18%			
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhoh Line	41.74	
		Unit-II	16.55	132kV KHP - Kilikhar Line	23.39	
		Unit- III	16.53	5MVA, 132/11kV TFR	0.40	
		Unit- IV	16.50	132kV Motanga - Rangia Line	36.93	
		Total	66.07	Auxiliary Consumption & Transformation Losses at Generator end	0.82%	

Note: Generation-Load Summary (MW) for October 09, 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	1,616.71	324.86	316.45	1,237.53	8.41
2	Eastern Grid	636.53	109.56	104.62	581.29	4.94
Total		2,253.24	434.42	421.07	1,818.82	13.35

Note: Generation-Load Summary for October 09, 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	1,072.31	295.71	289.29	717.47	6.42
2	Eastern Grid	457.05	50.87	51.18	465.31	-0.31
Total		1,529.36	346.58	340.47	1,182.78	6.11

Notes: 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.