

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: October 7, 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	184.97	400kV THP - Siliguri Line - I	208.88	
		Unit- II	182.48	400kV THP - Siliguri Line - II	207.53	
		Unit- III	68.65	400kV THP - Siliguri Line - IV	202.28	
		Unit- IV	172.69	400kV THP - Malbase Line - III	267.89	
		Unit- V	97.13	400kV Malbase - Siliguri Line	186.15	
		Unit- VI	184.83	-	-	
		Total	890.75	Auxiliary Consumption & Transformation Losses at Generator end	0.47%	
2	720MW MHP	Unit-I	130.19	400kV MHP - Jigmeling Line - I	208.26	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	130.18	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	110.20	400kV MHP - Jigmeling Line - III	209.45	
		Unit-IV	130.01	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	80.72	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	9.44	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	100.65	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	151.65	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	150.61	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.46	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.92	
		-	-	220kV Tsirang - Jigmeling Line	-10.94	
-	-	132kV Gelephu - Salakati Line	23.49			
Total	500.58	Auxiliary Consumption & Transformation Losses at Generator end	0.43%			
3	336MW CHP	Unit- I	91.21	220kV CHP - Birpara Line- I	71.79	
		Unit- II	91.22	220kV CHP - Birpara Line- II	71.76	
		Unit- III	90.51	220kV CHP - Malbase Line- III	116.97	
		Unit- IV	75.72	220kV CHP - Semtokha Line- IV	63.47	
		-	-	220kV Malbase - Birpara Line	27.07	
		-	-	66kV CHP - Chumdo Line	17.72	
		-	-	66kV CHP - Gedu Line	4.67	
		-	-	3x3MVA, 66/11kV TFR	1.51	
Total	348.66	Auxiliary Consumption & Transformation Losses at Generator end	0.22%			
4	24MW BHP (U/S)	Unit- I	12.00	220kV BHP - Semtokha Line	45.90	
		Unit- II	11.70	66kV BHP - Lobeyssa Line	26.30	
		Total	23.70	220kV BHP - Tsirang Line	-9.00	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.60	
		Unit- II	21.00	30MVA ICT, 220/66kV (HV)	4.70	
		Total	41.50	Auxiliary Consumption & Transformation Losses at Generator end	2.15%	
6	126MW DHP	Unit-I	37.16	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	37.84	220kV DHP - Dagapela Line	74.55	
		-	-	220kV Jigmeling - Dagapela Line	-42.99	
		-	-	5MVA, 220/33kV TFR	0.44	
Total	75.00	Auxiliary Consumption & Transformation Losses at Gen. end	0.01%			
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhoh Line	36.63	
		Unit-II	16.52	132kV KHP - Kilikhar Line	28.34	
		Unit- III	16.58	5MVA, 132/11kV TFR	0.50	
		Unit- IV	16.52	132kV Motanga - Rangia Line	52.29	
		Total	66.11	Auxiliary Consumption & Transformation Losses at Generator end	0.97%	

Note: Generation-Load Summary (MW) for October 07, 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	1,379.61	372.10	365.75	975.46	6.35
2	Eastern Grid	566.69	120.05	117.26	478.69	2.79
Total		1,946.30	492.15	483.01	1,454.15	9.14

Note: Generation-Load Summary for October 07, 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	1,100.01	308.36	304.33	748.13	4.03
2	Eastern Grid	441.01	74.56	73.06	409.97	1.50
Total		1,541.02	382.92	377.39	1,158.10	5.53

NOTE- 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: October 8, 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	187.61	400kV THP - Siliguri Line - I	213.00	
		Unit- II	186.70	400kV THP - Siliguri Line - II	214.00	
		Unit- III	70.20	400kV THP - Siliguri Line - IV	205.00	
		Unit- IV	170.40	400kV THP - Malbase Line - III	251.00	
		Unit- V	85.00	400kV Malbase - Siliguri Line	194.91	
		Unit- VI	186.90	-	-	
		Total	886.81	Auxiliary Consumption & Transformation Losses at Generator end	0.43%	
2	720MW MHP	Unit-I	130.15	400kV MHP - Jigmeling Line - I	223.76	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	135.31	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	115.66	400kV MHP - Jigmeling Line - III	225.39	
		Unit-IV	135.49	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	64.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-10.93	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	113.66	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	171.24	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	170.48	
		-	-	80MVA, 220/132kV ICT - I (HV)	12.44	
		-	-	80MVA, 220/132kV ICT - II (HV)	12.65	
		-	-	220kV Tsirang - Jigmeling Line	-2.52	
-	-	132kV Gelephu - Salakati Line	15.64			
Total	516.61	Auxiliary Consumption & Transformation Losses at Generator end	0.67%			
3	336MW CHP	Unit- I	92.17	220kV CHP - Birpara Line- I	71.80	
		Unit- II	91.86	220kV CHP - Birpara Line- II	71.35	
		Unit- III	91.98	220kV CHP - Malbase Line- III	133.27	
		Unit- IV	76.00	220kV CHP - Semtokha Line- IV	52.62	
		-	-	220kV Malbase - Birpara Line	15.52	
		-	-	66kV CHP - Chumdo Line	13.30	
		-	-	66kV CHP - Gedu Line	5.50	
		-	-	3x3MVA, 66/11kV TFR	0.90	
Total	352.01	Auxiliary Consumption & Transformation Losses at Generator end	0.93%			
4	24MW BHP (U/S)	Unit- I	11.60	220kV BHP - Semtokha Line	43.90	
		Unit- II	11.30	66kV BHP - Lobeyasa Line	24.38	
		Total	22.90	220kV BHP - Tsirang Line	-4.86	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.36	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	2.50	
		Total	41.60	Auxiliary Consumption & Transformation Losses at Generator end	1.12%	
6	126MW DHP	Unit-I	36.86	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	37.04	220kV DHP - Dagapela Line	73.48	
		-	-	220kV Jigmeling - Dagapela Line	-42.56	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	73.90	Auxiliary Consumption & Transformation Losses at Generator end	0.30%			
7	60MW KHP	Unit- I	16.55	132kV KHP - Nangkhoh Line	40.96	
		Unit-II	16.60	132kV KHP - Kilikhar Line	24.17	
		Unit- III	16.53	5MVA, 132/11kV TFR	0.39	
		Unit- IV	16.58	132kV Motanga - Rangia Line	42.29	
		Total	66.26	Auxiliary Consumption & Transformation Losses at Generator end	1.12%	

Note: Generation-Load Summary (MW) for October 08, 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	1,377.22	351.60	343.58	985.58	8.02
2	Eastern Grid	582.87	109.60	105.40	513.31	4.20
Total		1,960.09	461.20	448.98	1,498.89	12.22

Note: Generation-Load Summary for October 08, 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	1,063.70	269.46	261.89	727.47	7.57
2	Eastern Grid	447.52	61.11	59.50	453.18	1.61
Total		1,511.22	330.57	321.39	1,180.65	9.18

Notes: MAT and WEST 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.
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