

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	October 2, 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	146.39	400kV THP - Siliguri Line - I	182.97	
		Unit- II	158.32	400kV THP - Siliguri Line - II	181.47	
		Unit- III	109.30	400kV THP - Siliguri Line- IV	177.31	
		Unit- IV	108.89	400kV THP - Malbase Line - III	239.78	
		Unit- V	137.30	400kV Malbase - Siliguri Line	161.36	
		Unit- VI	130.08	-	-	
		Total	790.28	Auxiliary Consumption & Transformation Losses at Generator end	1.11%	
2	720MW MHP	Unit-I	90.20	400kV MHP - Jigmeling Line - I	177.66	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	130.16	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	90.56	400kV MHP - Jigmeling Line - III	178.99	
		Unit-IV	130.41	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	80.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	40.59	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	78.11	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	117.56	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	116.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	19.75	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.08	
		-	-	220kV Tsirang - Jigmeling Line	-1.13	
-	-	132kV Gelephu - Salakati Line	22.40			
Total	441.33	Auxiliary Consumption & Transformation Losses at Generator end	1.06%			
3	336MW CHP	Unit- I	91.67	220kV CHP - Birpara Line- I	73.03	
		Unit- II	91.00	220kV CHP - Birpara Line- II	73.06	
		Unit- III	91.67	220kV CHP - Malbase Line- III	97.58	
		Unit- IV	75.44	220kV CHP - Semtokha Line- IV	80.33	
		-	-	220kV Malbase - Birpara Line	44.84	
		-	-	66kV CHP - Chumdo Line	17.98	
		-	-	66kV CHP - Gedu Line	5.63	
		-	-	3x3MVA, 66/11kV TFR	1.72	
Total	349.78	Auxiliary Consumption & Transformation Losses at Generator end	0.13%			
4	24MW BHP (U/S)	Unit- I	10.40	220kV BHP - Semtokha Line	28.80	
		Unit- II	10.10	66kV BHP - Lobeyssa Line	25.06	
		Total	20.50	220kV BHP - Tsirang Line	1.59	
5	40MW BHP (L/S)	Unit- I	18.10	5MVA, 66/11kV TFR	0.62	
		Unit- II	18.20	30MVA ICT, 220/66kV (HV)	5.72	
		Total	36.30	Auxiliary Consumption & Transformation Losses at Generator end	1.29%	
6	126MW DHP	Unit-I	33.35	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	33.04	220kV DHP - Dagapela Line	65.90	
		-	-	220kV Jigmeling - Dagapela Line	-4.97	
		-	-	5MVA, 220/33kV TFR	0.35	
Total	66.39	Auxiliary Consumption & Transformation Losses at Gen. end	0.21%			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	35.72	
		Unit-II	16.50	132kV KHP - Kilikhar Line	29.15	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.48	
		Unit- IV	16.50	132kV Motanga - Rangia Line	53.58	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Generator end	0.98%	

Note: Generation-Load Summary (MW) for October 02, 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	1,263.25	365.37	355.30	894.04	10.07
2	Eastern Grid	507.33	123.52	118.19	387.65	5.33
Total		1,770.58	488.89	473.49	1,281.69	15.40

Note: Generation-Load Summary for October 02, 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	1,242.77	312.05	307.63	922.34	4.42
2	Eastern Grid	507.26	64.35	61.46	451.29	2.89
Total		1,750.03	376.40	369.09	1,373.63	7.31

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: October 3, 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	0.00	400kV THP - Siliguri Line - I	175.61	
		Unit- II	98.10	400kV THP - Siliguri Line - II	173.77	
		Unit- III	168.61	400kV THP - Siliguri Line - IV	169.42	
		Unit- IV	169.45	400kV THP - Malbase Line - III	209.25	
		Unit- V	167.58	400kV Malbase - Siliguri Line	160.67	
		Unit- VI	129.59	-	-	
		Total	733.33	Auxiliary Consumption & Transformation Losses at Generator end	0.72%	
2	720MW MHP	Unit-I	87.06	400kV MHP - Jigmeling Line - I	189.05	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	130.10	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	90.64	400kV MHP - Jigmeling Line - III	190.36	
		Unit-IV	130.56	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	56.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	6.74	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	85.42	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	143.63	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	142.82	
		-	-	80MVA, 220/132kV ICT - I (HV)	11.23	
		-	-	80MVA, 220/132kV ICT - II (HV)	11.45	
		-	-	220kV Tsirang - Jigmeling Line	-0.46	
-	-	132kV Gelephu - Salakati Line	17.40			
Total	438.36	Auxiliary Consumption & Transformation Losses at Generator end	0.67%			
3	336MW CHP	Unit- I	91.41	220kV CHP - Birpara Line- I	67.05	
		Unit- II	90.98	220kV CHP - Birpara Line- II	66.73	
		Unit- III	91.20	220kV CHP - Malbase Line- III	126.64	
		Unit- IV	75.36	220kV CHP - Semtokha Line- IV	66.85	
		-	-	220kV Malbase - Birpara Line	11.83	
		-	-	66kV CHP - Chumdo Line	14.44	
		-	-	66kV CHP - Gedu Line	5.24	
		-	-	3x3MVA, 66/11kV TFR	0.89	
Total	348.95	Auxiliary Consumption & Transformation Losses at Generator end	0.32%			
4	24MW BHP (U/S)	Unit- I	10.20	220kV BHP - Semtokha Line	31.50	
		Unit- II	9.90	66kV BHP - Lobeyssa Line	23.09	
		Total	20.10	220kV BHP - Tsirang Line	1.23	
5	40MW BHP (L/S)	Unit- I	18.30	5MVA, 66/11kV TFR	0.38	
		Unit- II	18.30	30MVA ICT, 220/66kV (HV)	3.87	
		Total	36.60	Auxiliary Consumption & Transformation Losses at Generator end	0.88%	
6	126MW DHP	Unit-I	32.30	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	29.00	220kV DHP - Dagapela Line	60.89	
		-	-	220kV Jigmeling - Dagapela Line	-29.97	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	61.30	Auxiliary Consumption & Transformation Losses at Generator end	0.18%			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	42.25	
		Unit-II	16.50	132kV KHP - Kilikhar Line	22.70	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.35	
		Unit- IV	16.50	132kV Motanga - Rangia Line	31.40	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Generator end	1.06%	

Note: Generation-Load Summary (MW) for October 03, 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	1,200.28	345.69	338.69	825.08	7.00
2	Eastern Grid	504.36	113.20	109.55	420.67	3.65
Total		1,704.64	458.89	448.24	1,245.75	10.65

Note: Generation-Load Summary for October 03, 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	1,241.84	309.60	308.28	911.81	1.32
2	Eastern Grid	517.28	58.71	55.56	479.00	3.15
Total		1,759.12	368.31	363.84	1,390.81	4.47

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.