

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: October 17, 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	166.87	400kV THP - Siliguri Line - I	190.35	THP Unit- III under Shutdown.
		Unit- II	167.11	400kV THP - Siliguri Line - II	190.34	
		Unit- III	0.00	400kV THP - Siliguri Line - IV	185.57	
		Unit- IV	138.20	400kV THP - Malbase Line - III	252.27	
		Unit- V	183.71	400kV Malbase - Siliguri Line	170.05	
		Unit- VI	168.81	-	-	
		Total	824.70	Auxiliary Consumption & Transformation Losses at Generator end	0.75%	
2	720MW MHP	Unit-I	100.15	400kV MHP - Jigmeling Line - I	161.62	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	100.17	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	100.21	400kV MHP - Jigmeling Line - III	162.75	
		Unit-IV	100.47	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	73.76	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	19.98	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	75.01	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	112.19	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	113.30	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.73	
		-	-	80MVA, 220/132kV ICT - II (HV)	18.07	
		-	-	220kV Tsirang - Jigmeling Line	-20.29	
-	-	132kV Gelephu - Salakati Line	17.04			
Total	401.00	Auxiliary Consumption & Transformation Losses at Generator end	0.72%			
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	70.09	
		Unit- II	91.18	220kV CHP - Birpara Line- II	70.02	
		Unit- III	91.63	220kV CHP - Malbase Line- III	101.51	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	92.74	
		-	-	220kV Malbase - Birpara Line	36.06	
		-	-	66kV CHP - Chumdo Line	1.12	
		-	-	66kV CHP - Gedu Line	12.35	
		-	-	3x3MVA, 66/11kV TFR	1.63	
Total	349.34	Auxiliary Consumption & Transformation Losses at Generator end	-0.03%			
4	24MW BHP (U/S)	Unit- I	10.00	220kV BHP - Semtokha Line	43.70	
		Unit- II	9.60	66kV BHP - Lobeyasa Line	28.27	
		Total	19.60	220kV BHP - Tsirang Line	-17.84	
5	40MW BHP (L/S)	Unit- I	17.70	5MVA, 66/11kV TFR	0.58	
		Unit- II	17.70	30MVA ICT, 220/66kV (HV)	9.26	
		Total	35.40	Auxiliary Consumption & Transformation Losses at Generator end	0.53%	
6	126MW DHP	Unit-I	34.36	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	34.01	220kV DHP - Dagapela Line	67.95	
		-	-	220kV Jigmeling - Dagapela Line	-35.89	
		-	-	5MVA, 220/33kV TFR	0.40	
Total	68.37	Auxiliary Consumption & Transformation Losses at Gen. end	0.03%			
7	60MW KHP	Unit- I	16.11	132kV KHP - Nangkhoh Line	35.91	
		Unit-II	16.47	132kV KHP - Kilikhar Line	27.40	
		Unit- III	15.48	5MVA, 132/11kV TFR	0.65	
		Unit- IV	16.25	132kV Motanga - Rangia Line	48.68	
		Total	64.31	Auxiliary Consumption & Transformation Losses at Generator end	0.54%	

Note: Generation-Load Summary (MW) for October 17, 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	1,297.41	369.33	362.97	912.48	6.36
2	Eastern Grid	465.31	114.69	111.47	366.22	3.22
Total		1,762.72	484.02	474.44	1,278.70	9.58

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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	1,280.90	317.83	313.61	896.50	4.22
2	Eastern Grid	466.82	74.23	71.27	459.16	2.96
Total		1,747.72	392.06	384.88	1,355.66	7.18

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 18, 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	168.48	400kV THP - Siliguri Line - I	170.06	THP Unit- V under Shutdown.
		Unit- II	167.65	400kV THP - Siliguri Line - II	169.71	
		Unit- III	78.47	400kV THP - Siliguri Line- IV	164.61	
		Unit- IV	139.34	400kV THP - Malbase Line - III	208.83	
		Unit- V	0.00	400kV Malbase - Siliguri Line	153.14	
		Unit- VI	168.22	-	-	
		Total	722.16	Auxiliary Consumption & Transformation Losses at Generator end	1.24%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	157.44	MHP Unit- I under Shutdown. 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	134.86	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	115.39	400kV MHP - Jigmeling Line - III	158.34	
		Unit-IV	130.24	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	60.98	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-3.60	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	78.62	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	119.82	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	118.09	
		-	-	80MVA, 220/132kV ICT - I (HV)	14.21	
		-	-	80MVA, 220/132kV ICT - II (HV)	14.43	
		-	-	220kV Tsirang - Jigmeling Line	-4.41	
-	-	132kV Gelephu - Salakati Line	17.21			
Total	380.49	Auxiliary Consumption & Transformation Losses at Generator end	0.98%			
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	64.81	
		Unit- II	91.18	220kV CHP - Birpara Line- II	64.62	
		Unit- III	91.63	220kV CHP - Malbase Line- III	122.20	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	85.31	
		-	-	220kV Malbase - Birpara Line	11.98	
		-	-	66kV CHP - Chumdo Line	0.43	
		-	-	66kV CHP - Gedu Line	11.65	
		-	-	3x3MVA, 66/11kV TFR	0.85	
Total	349.34	Auxiliary Consumption & Transformation Losses at Generator end	-0.15%			
4	24MW BHP (U/S)	Unit- I	10.00	220kV BHP - Semtokha Line	32.42	
		Unit- II	9.60	66kV BHP - Lobeyasa Line	24.44	
		Total	19.60	220kV BHP - Tsirang Line	-3.20	
5	40MW BHP (L/S)	Unit- I	17.50	5MVA, 66/11kV TFR	0.35	
		Unit- II	17.50	30MVA ICT, 220/66kV (HV)	5.61	
		Total	35.00	Auxiliary Consumption & Transformation Losses at Generator end	1.08%	
6	126MW DHP	Unit-I	33.84	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	33.99	220kV DHP - Dagapela Line	67.42	
		-	-	220kV Jigmeling - Dagapela Line	-35.96	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	67.83	Auxiliary Consumption & Transformation Losses at Generator end	0.31%			
7	60MW KHP	Unit- I	15.77	132kV KHP - Nangkhoh Line	39.87	
		Unit-II	16.54	132kV KHP - Kilikhar Line	22.37	
		Unit- III	15.34	5MVA, 132/11kV TFR	0.45	
		Unit- IV	15.82	132kV Motanga - Rangia Line	37.07	
		Total	63.47	Auxiliary Consumption & Transformation Losses at Generator end	1.23%	

Note: Generation-Load Summary (MW) for October 18, 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	1,193.93	363.45	354.23	798.93	9.22
2	Eastern Grid	443.96	104.70	100.19	370.81	4.51
Total		1,637.89	468.15	454.42	1,169.74	13.73

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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	1,230.67	308.14	302.82	855.09	5.32
2	Eastern Grid	467.87	67.07	65.28	468.24	1.79
Total		1,698.54	375.21	368.10	1,323.33	7.11

Note: 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.