

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: October 18, 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	169.58	400kV THP - Siliguri Line - I	164.14	
		Unit- II	167.80	400kV THP - Siliguri Line - II	163.44	
		Unit- III	79.80	400kV THP - Siliguri Line - IV	157.92	
		Unit- IV	138.93	400kV THP - Malbase Line - III	231.60	
		Unit- V	98.30	400kV Malbase - Siliguri Line	141.08	
		Unit- VI	69.59	-	-	
		Total	724.00	Auxiliary Consumption & Transformation Losses at Generator end	0.95%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	120.14	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	94.81	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	100.22	400kV MHP - Jigmeling Line - III	120.75	
		Unit-IV	120.19	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	72.25	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	19.89	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	54.69	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	81.68	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	82.48	
		-	-	80MVA, 220/132kV ICT - I (HV)	18.04	
		-	-	80MVA, 220/132kV ICT - II (HV)	18.38	
		-	-	220kV Tsirang - Jigmeling Line	-17.53	
-	-	132kV Gelephu - Salakati Line	15.03			
Total	315.22	Auxiliary Consumption & Transformation Losses at Generator end	0.66%			
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	64.05	
		Unit- II	91.18	220kV CHP - Birpara Line- II	63.84	
		Unit- III	91.63	220kV CHP - Malbase Line- III	104.09	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	102.42	
		-	-	220kV Malbase - Birpara Line	22.86	
		-	-	66kV CHP - Chumdo Line	1.15	
		-	-	66kV CHP - Gedu Line	12.17	
		-	-	3x3MVA, 66/11kV TFR	1.51	
Total	349.34	Auxiliary Consumption & Transformation Losses at Generator end	0.03%			
4	24MW BHP (U/S)	Unit- I	9.80	220kV BHP - Semtokha Line	39.84	
		Unit- II	9.50	66kV BHP - Lobeyasa Line	28.02	
		Total	19.30	220kV BHP - Tsirang Line	-14.92	
5	40MW BHP (L/S)	Unit- I	17.50	5MVA, 66/11kV TFR	0.60	
		Unit- II	17.50	30MVA ICT, 220/66kV (HV)	10.00	
		Total	35.00	Auxiliary Consumption & Transformation Losses at Generator end	1.40%	
6	126MW DHP	Unit-I	33.32	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	33.01	220kV DHP - Dagapela Line	65.92	
		-	-	220kV Jigmeling - Dagapela Line	-33.97	
		-	-	5MVA, 220/33kV TFR	0.40	
Total	66.33	Auxiliary Consumption & Transformation Losses at Gen. end	0.02%			
7	60MW KHP	Unit- I	16.07	132kV KHP - Nangkhoh Line	36.60	
		Unit-II	16.08	132kV KHP - Kilikhar Line	26.58	
		Unit- III	16.11	5MVA, 132/11kV TFR	0.36	
		Unit- IV	16.00	132kV Motanga - Rangia Line	43.63	
		Total	64.26	Auxiliary Consumption & Transformation Losses at Generator end	1.12%	

Note: Generation-Load Summary (MW) for October 18, 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	1,193.97	400.20	392.42	777.33	7.78
2	Eastern Grid	379.48	118.41	115.61	277.51	2.80
Total		1,573.45	518.61	508.03	1,054.84	10.58

Note: Generation-Load Summary for October 18, 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	1,191.42	313.76	311.21	813.95	2.55
2	Eastern Grid	429.22	81.93	79.97	411.00	1.96
Total		1,620.64	395.69	391.18	1,224.95	4.51

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 19, 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	166.30	400kV THP - Siliguri Line - I	171.08	
		Unit- II	168.84	400kV THP - Siliguri Line - II	166.86	
		Unit- III	78.78	400kV THP - Siliguri Line - IV	163.02	
		Unit- IV	138.49	400kV THP - Malbase Line - III	216.11	
		Unit- V	97.61	400kV Malbase - Siliguri Line	151.41	
		Unit- VI	69.57	-	-	
		Total	719.59	Auxiliary Consumption & Transformation Losses at Generator end	0.35%	
2	720MW MHP	Unit-I	109.88	400kV MHP - Jigmeling Line - I	148.85	MHP Unit- II 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	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	120.48	400kV MHP - Jigmeling Line - III	151.02	
		Unit-IV	130.19	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	57.77	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-0.13	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	73.26	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	109.87	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	110.72	
		-	-	80MVA, 220/132kV ICT - I (HV)	14.00	
		-	-	80MVA, 220/132kV ICT - II (HV)	14.26	
		-	-	220kV Tsirang - Jigmeling Line	-5.14	
-	-	132kV Gelephu - Salakati Line	14.77			
Total	360.55	Auxiliary Consumption & Transformation Losses at Generator end	0.81%			
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	61.32	
		Unit- II	91.18	220kV CHP - Birpara Line- II	61.40	
		Unit- III	91.63	220kV CHP - Malbase Line- III	121.67	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	90.23	
		-	-	220kV Malbase - Birpara Line	6.27	
		-	-	66kV CHP - Chumdo Line	0.39	
		-	-	66kV CHP - Gedu Line	11.66	
		-	-	3x3MVA, 66/11kV TFR	0.90	
Total	349.34	Auxiliary Consumption & Transformation Losses at Generator end	0.51%			
4	24MW BHP (U/S)	Unit- I	9.70	220kV BHP - Semtokha Line	31.90	
		Unit- II	9.30	66kV BHP - Lobeyssa Line	25.03	
		Total	19.00	220kV BHP - Tsirang Line	-4.05	
5	40MW BHP (L/S)	Unit- I	17.10	5MVA, 66/11kV TFR	0.09	
		Unit- II	17.40	30MVA ICT, 220/66kV (HV)	6.58	
		Total	34.50	Auxiliary Consumption & Transformation Losses at Generator end	0.99%	
6	126MW DHP	Unit-I	30.84	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	35.01	220kV DHP - Dagapela Line	65.46	
		-	-	220kV Jigmeling - Dagapela Line	-34.34	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	65.85	Auxiliary Consumption & Transformation Losses at Generator end	0.29%			
7	60MW KHP	Unit- I	14.27	132kV KHP - Nangkhoh Line	35.89	
		Unit-II	14.31	132kV KHP - Kilikhar Line	20.26	
		Unit- III	14.26	5MVA, 132/11kV TFR	0.40	
		Unit- IV	14.30	132kV Motanga - Rangia Line	31.95	
		Total	57.14	Auxiliary Consumption & Transformation Losses at Generator end	1.03%	

Note: Generation-Load Summary (MW) for October 19, 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	1,188.28	377.72	372.71	781.36	5.01
2	Eastern Grid	417.69	106.32	102.82	340.57	3.50
Total		1,605.97	484.04	475.53	1,121.93	8.51

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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	1,666.11	307.28	299.34	1,259.05	7.94
2	Eastern Grid	853.68	88.75	83.33	864.71	5.42
Total		2,519.79	396.03	382.67	2,123.76	13.36

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.