

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: September 26, 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	187.38	400kV THP - Siliguri Line - I	252.00	
		Unit- II	187.30	400kV THP - Siliguri Line - II	252.00	
		Unit- III	170.30	400kV THP - Siliguri Line- IV	244.00	
		Unit- IV	160.50	400kV THP - Malbase Line - III	311.00	
		Unit- V	187.20	400kV Malbase - Siliguri Line	225.46	
		Unit- VI	187.40	-	-	
		Total	1,080.08	Auxiliary Consumption & Transformation Losses at Generator end	1.95%	
2	720MW MHP	Unit-I	197.64	400kV MHP - Jigmeling Line - I	334.61	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmo line I not in service. 400kV JLG_ALI Line I (Interim) on Standby.
		Unit-II	197.76	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.33	400kV MHP - Jigmeling Line - III	336.87	
		Unit-IV	195.84	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	48.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	67.24	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	148.73	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	223.27	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	223.26	
		-	-	80MVA, 220/132kV ICT - I (HV)	30.29	
		-	-	80MVA, 220/132kV ICT - II (HV)	30.83	
		-	-	220kV Tsirang - Jigmeling Line	-20.20	
-	-	132kV Gelephu - Salakati Line	18.87			
Total	726.57	Auxiliary Consumption & Transformation Losses at Generator end	0.98%			
3	336MW CHP	Unit- I	92.26	220kV CHP - Birpara Line- I	77.97	
		Unit- II	92.21	220kV CHP - Birpara Line- II	77.87	
		Unit- III	91.61	220kV CHP - Malbase Line- III	120.51	
		Unit- IV	76.00	220kV CHP - Semtokha Line- IV	50.48	
		-	-	220kV Malbase - Birpara Line	43.04	
		-	-	66kV CHP - Chumdo Line	16.20	
		-	-	66kV CHP - Gedu Line	5.80	
		-	-	3x3MVA, 66/11kV TFR	1.55	
Total	352.08	Auxiliary Consumption & Transformation Losses at Generator end	0.48%			
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	53.70	
		Unit- II	12.10	66kV BHP - Lobeysa Line	28.02	
		Total	24.50	220kV BHP - Tsirang Line	-17.00	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.66	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	4.82	
		Total	41.70	Auxiliary Consumption & Transformation Losses at Generator end	1.24%	
6	126MW DHP	Unit-I	38.30	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	38.00	220kV DHP - Dagapela Line	75.86	
		-	-	220kV Jigmeling - Dagapela Line	-13.20	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	76.30	Auxiliary Consumption & Transformation Losses at Gen. end	0.18%			
7	60MW KHP	Unit- I	16.57	132kV KHP - Nangkhor Line	37.33	
		Unit-II	16.56	132kV KHP - Kilikhar Line	27.55	
		Unit- III	16.53	5MVA, 132/11kV TFR	0.73	
		Unit- IV	16.56	132kV Motanga - Rangia Line	46.24	
		Total	66.22	Auxiliary Consumption & Transformation Losses at Generator end	0.92%	

Note: Generation-Load Summary (MW) for September 26, 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	1,574.66	409.32	385.58	1,172.34	23.74
2	Eastern Grid	792.79	125.42	117.72	660.37	7.70
Total		2,367.45	534.74	503.30	1,832.71	31.44

Note: Generation-Load Summary for September 26, 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	1,368.87	294.16	287.29	1,011.43	6.87
2	Eastern Grid	558.35	72.36	68.75	549.27	3.61
Total		1,927.22	366.52	356.04	1,560.70	10.48

NOTE- All WDC 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: September 27, 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	187.30	400kV THP - Siliguri Line - I	264.00	
		Unit- II	187.20	400kV THP - Siliguri Line - II	264.00	
		Unit- III	170.20	400kV THP - Siliguri Line- IV	256.00	
		Unit- IV	187.00	400kV THP - Malbase Line - III	303.00	
		Unit- V	187.20	400kV Malbase - Siliguri Line	242.18	
		Unit- VI	187.70	-	-	
		Total	1,106.60	Auxiliary Consumption & Transformation Losses at Generator end	1.77%	
2	720MW MHP	Unit-I	160.22	400kV MHP - Jigmeling Line - I	281.26	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	160.10	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.44	400kV MHP - Jigmeling Line - III	282.69	
		Unit-IV	160.69	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	50.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	24.24	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	133.12	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	199.99	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	199.45	
		-	-	80MVA, 220/132kV ICT - I (HV)	15.72	
		-	-	80MVA, 220/132kV ICT - II (HV)	15.99	
		-	-	220kV Tsirang - Jigmeling Line	3.48	
-	-	132kV Gelephu - Salakati Line	16.18			
Total	616.45	Auxiliary Consumption & Transformation Losses at Generator end	0.41%			
3	336MW CHP	Unit- I	92.00	220kV CHP - Birpara Line- I	77.20	
		Unit- II	92.00	220kV CHP - Birpara Line- II	76.02	
		Unit- III	92.00	220kV CHP - Malbase Line- III	121.26	
		Unit- IV	76.00	220kV CHP - Semtokha Line- IV	54.62	
		-	-	220kV Malbase - Birpara Line	33.76	
		-	-	66kV CHP - Chumdo Line	12.20	
		-	-	66kV CHP - Gedu Line	5.80	
		-	-	3x3MVA, 66/11kV TFR	0.90	
Total	352.00	Auxiliary Consumption & Transformation Losses at Generator end	1.14%			
4	24MW BHP (U/S)	Unit- I	11.70	220kV BHP - Semtokha Line	41.10	
		Unit- II	11.50	66kV BHP - Lobeyasa Line	24.48	
		Total	23.20	220kV BHP - Tsirang Line	-1.83	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.34	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	2.18	
		Total	41.70	Auxiliary Consumption & Transformation Losses at Generator end	1.25%	
6	126MW DHP	Unit-I	37.73	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	36.03	220kV DHP - Dagapela Line	72.31	
		-	-	220kV Jigmeling - Dagapela Line	-11.20	
		-	-	5MVA, 220/33kV TFR	1.44	
Total	73.76	Auxiliary Consumption & Transformation Losses at Generator end	0.01%			
7	60MW KHP	Unit- I	16.51	132kV KHP - Nangkhoh Line	42.91	
		Unit-II	16.59	132kV KHP - Kilikhar Line	22.07	
		Unit- III	16.49	5MVA, 132/11kV TFR	0.70	
		Unit- IV	16.58	132kV Motanga - Rangia Line	34.56	
		Total	66.17	Auxiliary Consumption & Transformation Losses at Generator end	0.74%	

Note: Generation-Load Summary (MW) for September 27, 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	1,597.26	369.42	345.00	1,213.16	24.42
2	Eastern Grid	682.62	114.00	111.01	583.30	2.99
Total		2,279.88	483.42	456.01	1,796.46	27.41

Note: Generation-Load Summary for September 27, 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	1,340.05	285.55	278.74	986.03	6.81
2	Eastern Grid	711.12	60.86	56.92	718.73	3.94
Total		2,051.17	346.41	335.66	1,704.76	10.75

Notes: All WDC & 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.
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