

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: September 3, 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	185.06	400kV THP - Siliguri Line - I	261.59	
		Unit- II	184.18	400kV THP - Siliguri Line - II	260.31	
		Unit- III	185.68	400kV THP - Siliguri Line- IV	254.28	
		Unit- IV	185.23	400kV THP - Malbase Line - III	328.16	
		Unit- V	185.54	400kV Malbase - Siliguri Line	235.70	
		Unit- VI	184.73	-	-	
		Total	1,110.42	Auxiliary Consumption & Transformation Losses at Generator end	0.55%	
2	720MW MHP	Unit-I	197.84	400kV MHP - Jigmeling Line - I	360.81	400kV MHP-JLG Line II & III on Standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	197.85	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.47	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	197.89	400kV MHP - Jigmeling Line - IV	362.20	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	50.74	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	166.07	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	248.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	249.16	
		-	-	80MVA, 220/132kV ICT - I (HV)	40.10	
		-	-	80MVA, 220/132kV ICT - II (HV)	40.91	
		-	-	220kV Tsirang - Jigmeling Line	-19.37	
-	-	132kV Gelephu - Salakati Line	10.20			
Total	729.05	Auxiliary Consumption & Transformation Losses at Generator end	0.83%			
3	336MW CHP	Unit- I	91.03	220kV CHP - Birpara Line- I	77.85	
		Unit- II	91.22	220kV CHP - Birpara Line- II	77.57	
		Unit- III	91.33	220kV CHP - Malbase Line- III	119.74	
		Unit- IV	75.56	220kV CHP - Semtokha Line- IV	51.87	
		-	-	220kV Malbase - Birpara Line	35.29	
		-	-	66kV CHP - Chumdo Line	15.40	
		-	-	66kV CHP - Gedu Line	5.20	
		-	-	3x3MVA, 66/11kV TFR	1.51	
Total	349.14	Auxiliary Consumption & Transformation Losses at Generator end	0.00%			
4	24MW BHP (U/S)	Unit- I	11.87	220kV BHP - Semtokha Line	53.64	
		Unit- II	11.87	66kV BHP - Lobeyssa Line	27.63	
		Total	23.74	220kV BHP - Tsirang Line	-16.34	
5	40MW BHP (L/S)	Unit- I	20.40	5MVA, 66/11kV TFR	0.67	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	4.41	
		Total	41.60	Auxiliary Consumption & Transformation Losses at Generator end	-0.40%	
6	126MW DHP	Unit-I	53.38	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	53.05	220kV DHP - Dagapela Line	105.81	
		-	-	220kV Jigmeling - Dagapela Line	-50.04	
		-	-	5MVA, 220/33kV TFR	0.40	
Total	106.43	Auxiliary Consumption & Transformation Losses at Gen. end	0.21%			
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhoh Line	37.87	
		Unit-II	16.51	132kV KHP - Kilikhar Line	26.78	
		Unit- III	16.44	5MVA, 132/11kV TFR	0.42	
		Unit- IV	16.41	132kV Motanga - Rangia Line	30.04	
		Total	65.85	Auxiliary Consumption & Transformation Losses at Generator end	1.18%	

Note: Generation-Load Summary (MW) for September 03, 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	1,631.33	398.07	392.03	1,202.59	6.04
2	Eastern Grid	794.90	122.10	115.28	703.47	6.82
Total		2,426.23	520.17	507.31	1,906.06	12.86

Note: Generation-Load Summary for September 03, 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	1,672.29	304.51	285.03	1,275.72	19.48
2	Eastern Grid	855.13	84.37	79.48	862.82	4.89
Total		2,527.42	388.88	364.51	2,138.54	24.37

NOTE- SAL & 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: September 4, 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	184.25	400kV THP - Siliguri Line - I	268.85	
		Unit- II	184.23	400kV THP - Siliguri Line - II	267.30	
		Unit- III	185.31	400kV THP - Siliguri Line- IV	260.85	
		Unit- IV	184.47	400kV THP - Malbase Line - III	303.68	
		Unit- V	185.81	400kV Malbase - Siliguri Line	248.56	
		Unit- VI	185.65	-	-	
		Total	1,109.72	Auxiliary Consumption & Transformation Losses at Generator end	0.81%	
2	720MW MHP	Unit-I	197.86	400kV MHP - Jigmeling Line - I	360.99	400kV MHP-JLG Line II & III under standby 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	197.86	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.42	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	197.89	400kV MHP - Jigmeling Line - IV	362.36	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	12.55	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	175.44	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	263.37	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	264.15	
		-	-	80MVA, 220/132kV ICT - I (HV)	18.66	
		-	-	80MVA, 220/132kV ICT - II (HV)	19.05	
		-	-	220kV Tsirang - Jigmeling Line	-16.17	
-	-	132kV Gelephu - Salakati Line	10.40			
Total	729.03	Auxiliary Consumption & Transformation Losses at Generator end	0.78%			
3	336MW CHP	Unit- I	91.38	220kV CHP - Birpara Line- I	76.43	
		Unit- II	91.19	220kV CHP - Birpara Line- II	76.42	
		Unit- III	91.66	220kV CHP - Malbase Line- III	135.61	
		Unit- IV	75.55	220kV CHP - Semtokha Line- IV	42.04	
		-	-	220kV Malbase - Birpara Line	19.96	
		-	-	66kV CHP - Chumdo Line	12.10	
		-	-	66kV CHP - Gedu Line	5.21	
		-	-	3x3MVA, 66/11kV TFR	1.01	
Total	349.78	Auxiliary Consumption & Transformation Losses at Generator end	0.27%			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	53.89	
		Unit- II	12.10	66kV BHP - Lobeyasa Line	25.55	
		Total	24.40	220kV BHP - Tsirang Line	-14.36	
5	40MW BHP (L/S)	Unit- I	20.45	5MVA, 66/11kV TFR	0.46	
		Unit- II	20.98	30MVA ICT, 220/66kV (HV)	2.27	
		Total	41.43	Auxiliary Consumption & Transformation Losses at Generator end	0.44%	
6	126MW DHP	Unit-I	46.31	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	47.58	220kV DHP - Dagapela Line	93.35	
		-	-	220kV Jigmeling - Dagapela Line	-39.83	
		-	-	5MVA, 220/33kV TFR	0.50	
Total	93.89	Auxiliary Consumption & Transformation Losses at Generator end	0.04%			
7	60MW KHP	Unit- I	16.47	132kV KHP - Nangkhoh Line	19.26	
		Unit-II	16.45	132kV KHP - Kilikhar Line	46.07	
		Unit- III	16.55	5MVA, 132/11kV TFR	0.40	
		Unit- IV	16.52	132kV Motanga - Rangia Line	8.43	
		Total	65.99	Auxiliary Consumption & Transformation Losses at Generator end	0.39%	

Note: Generation-Load Summary (MW) for September 04, 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	1,619.22	377.19	366.86	1,218.37	10.33
2	Eastern Grid	795.02	96.89	90.95	721.79	5.94
Total		2,414.24	474.08	457.81	1,940.16	16.27

Note: Generation-Load Summary for September 04, 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	1,672.82	281.86	272.05	1,293.66	9.81
2	Eastern Grid	855.66	72.74	67.45	880.22	5.29
Total		2,528.48	354.60	339.50	2,173.88	15.10

Notes: SAL & 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.