

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: September 19, 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	185.83	400kV THP - Siliguri Line - I	261.48	
		Unit- II	183.92	400kV THP - Siliguri Line - II	260.11	
		Unit- III	185.54	400kV THP - Siliguri Line- IV	251.63	
		Unit- IV	184.57	400kV THP - Malbase Line - III	330.09	
		Unit- V	185.27	400kV Malbase - Siliguri Line	232.72	
		Unit- VI	185.67	-	-	
		Total	1,110.80	Auxiliary Consumption & Transformation Losses at Generator end	0.67%	
2	720MW MHP	Unit-I	150.13	400kV MHP - Jigmeling Line - I	295.32	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line I (Interim) on Standby.
		Unit-II	150.07	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.45	400kV MHP - Jigmeling Line - III	297.29	
		Unit-IV	160.57	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	69.83	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	127.99	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	192.90	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	193.94	
		-	-	80MVA, 220/132kV ICT - I (HV)	47.30	
		-	-	80MVA, 220/132kV ICT - II (HV)	48.21	
		-	-	220kV Tsirang - Jigmeling Line	-5.64	
-	-	132kV Gelephu - Salakati Line	15.89			
Total	596.22	Auxiliary Consumption & Transformation Losses at Generator end	0.61%			
3	336MW CHP	Unit- I	91.48	220kV CHP - Birpara Line- I	79.84	
		Unit- II	91.33	220kV CHP - Birpara Line- II	79.73	
		Unit- III	91.58	220kV CHP - Malbase Line- III	101.58	
		Unit- IV	75.51	220kV CHP - Semtokha Line- IV	66.55	
		-	-	220kV Malbase - Birpara Line	52.58	
		-	-	66kV CHP - Chumdo Line	15.48	
		-	-	66kV CHP - Gedu Line	5.26	
		-	-	3x3MVA, 66/11kV TFR	1.40	
Total	349.90	Auxiliary Consumption & Transformation Losses at Generator end	0.02%			
4	24MW BHP (U/S)	Unit- I	11.87	220kV BHP - Semtokha Line	41.06	
		Unit- II	11.87	66kV BHP - Lobeysa Line	26.75	
		Total	23.74	220kV BHP - Tsirang Line	-2.97	
5	40MW BHP (L/S)	Unit- I	20.48	5MVA, 66/11kV TFR	0.72	
		Unit- II	21.04	30MVA ICT, 220/66kV (HV)	3.60	
		Total	41.52	Auxiliary Consumption & Transformation Losses at Generator end	-0.46%	
6	126MW DHP	Unit-I	39.84	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	39.02	220kV DHP - Dagapela Line	78.38	
		-	-	220kV Jigmeling - Dagapela Line	-31.64	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	78.86	Auxiliary Consumption & Transformation Losses at Gen. end	0.23%			
7	60MW KHP	Unit- I	16.47	132kV KHP - Nangkhoh Line	35.85	
		Unit-II	16.52	132kV KHP - Kilikhar Line	28.75	
		Unit- III	16.54	5MVA, 132/11kV TFR	0.50	
		Unit- IV	16.48	132kV Motanga - Rangia Line	38.92	
		Total	66.01	Auxiliary Consumption & Transformation Losses at Generator end	1.38%	

Note: Generation-Load Summary (MW) for September 19, 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	1,604.82	360.73	353.30	1,218.09	7.43
2	Eastern Grid	662.23	118.59	114.07	569.64	4.52
Total		2,267.05	479.32	467.37	1,787.73	11.95

Note: Generation-Load Summary for September 19, 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	1,324.66	311.43	301.80	933.31	9.63
2	Eastern Grid	693.47	81.50	77.17	691.89	4.33
Total		2,018.13	392.93	378.97	1,625.20	13.96

NOTE- MAT & MHP 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 20, 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	185.09	400kV THP - Siliguri Line - I	267.61	
		Unit- II	185.74	400kV THP - Siliguri Line - II	266.21	
		Unit- III	185.89	400kV THP - Siliguri Line- IV	259.44	
		Unit- IV	184.88	400kV THP - Malbase Line - III	310.61	
		Unit- V	185.24	400kV Malbase - Siliguri Line	244.66	
		Unit- VI	185.67	-	-	
		Total	1,112.51	Auxiliary Consumption & Transformation Losses at Generator end	0.78%	
2	720MW MHP	Unit-I	140.25	400kV MHP - Jigmeling Line - I	280.75	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line I (Interim) on Standby.
		Unit-II	145.16	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.42	400kV MHP - Jigmeling Line - III	282.65	
		Unit-IV	145.44	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	28.80	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	130.90	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	198.71	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	197.82	
		-	-	80MVA, 220/132kV ICT - I (HV)	31.85	
		-	-	80MVA, 220/132kV ICT - II (HV)	32.45	
		-	-	220kV Tsirang - Jigmeling Line	2.77	
-	-	132kV Gelephu - Salakati Line	11.97			
Total	566.27	Auxiliary Consumption & Transformation Losses at Generator end	0.51%			
3	336MW CHP	Unit- I	91.35	220kV CHP - Birpara Line- I	77.19	
		Unit- II	91.23	220kV CHP - Birpara Line- II	76.89	
		Unit- III	91.07	220kV CHP - Malbase Line- III	119.34	
		Unit- IV	75.50	220kV CHP - Semtokha Line- IV	57.80	
		-	-	220kV Malbase - Birpara Line	33.47	
		-	-	66kV CHP - Chumdo Line	11.47	
		-	-	66kV CHP - Gedu Line	5.12	
		-	-	3x3MVA, 66/11kV TFR	0.91	
Total	349.15	Auxiliary Consumption & Transformation Losses at Generator end	0.12%			
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	36.30	
		Unit- II	12.10	66kV BHP - Lobeysa Line	24.40	
		Total	24.50	220kV BHP - Tsirang Line	4.10	
5	40MW BHP (L/S)	Unit- I	20.40	5MVA, 66/11kV TFR	0.40	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	0.90	
		Total	41.50	Auxiliary Consumption & Transformation Losses at Generator end	1.21%	
6	126MW DHP	Unit-I	39.37	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	38.99	220kV DHP - Dagapela Line	77.91	
		-	-	220kV Jigmeling - Dagapela Line	-32.15	
		-	-	5MVA, 220/33kV TFR	0.43	
Total	78.36	Auxiliary Consumption & Transformation Losses at Generator end	0.03%			
7	60MW KHP	Unit- I	16.52	132kV KHP - Nangkhoh Line	42.62	
		Unit-II	16.54	132kV KHP - Kilikhar Line	22.31	
		Unit- III	16.59	5MVA, 132/11kV TFR	0.40	
		Unit- IV	16.52	132kV Motanga - Rangia Line	29.41	
		Total	66.17	Auxiliary Consumption & Transformation Losses at Generator end	1.27%	

Note: Generation-Load Summary (MW) for September 20, 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	1,606.02	345.63	335.74	1,225.47	9.89
2	Eastern Grid	632.44	98.55	94.84	568.81	3.71
Total		2,238.46	444.18	430.58	1,794.28	13.60

Note: Generation-Load Summary for September 20, 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	1,551.68	319.18	297.20	1,142.90	21.98
2	Eastern Grid	672.65	67.67	63.98	694.58	3.69
Total		2,224.33	386.85	361.18	1,837.48	25.67

Notes: MHP & 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.
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