

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: August 28, 2022
Hours: 19:00 Hours

Date	Time	Load(MW)
15-Aug-22	19:30 hrs	521.02

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.27	400kV THP - Siliguri Line - I	264.63	
		Unit- II	185.42	400kV THP - Siliguri Line - II	262.77	
		Unit- III	184.09	400kV THP - Siliguri Line - IV	255.06	
		Unit- IV	183.48	400kV THP - Malbase Line - III	322.44	
		Unit- V	185.01	400kV Malbase - Siliguri Line	237.63	
		Unit- VI	186.50	-	-	
		Total	1,109.77	Auxiliary Consumption & Transformation Losses at Generator end	0.44%	
2	720MW MHP	Unit-I	197.80	400kV MHP - Jigmeling Line - I	361.17	400kV MHP-JLG Line II & III on Standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	197.74	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.40	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	197.58	400kV MHP - Jigmeling Line - IV	362.41	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	67.91	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	161.73	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	243.41	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	242.58	
		-	-	80MVA, 220/132kV ICT - I (HV)	39.63	
		-	-	80MVA, 220/132kV ICT - II (HV)	40.39	
		-	-	220kV Tsirang - Jigmeling Line	-16.94	
-	-	132kV Gelephu - Salakati Line	12.09			
Total	728.52	Auxiliary Consumption & Transformation Losses at Generator end	0.68%			
3	336MW CHP	Unit- I	91.51	220kV CHP - Birpara Line- I	75.87	
		Unit- II	90.88	220kV CHP - Birpara Line- II	76.01	
		Unit- III	91.49	220kV CHP - Malbase Line- III	118.95	
		Unit- IV	75.31	220kV CHP - Semtokha Line- IV	54.75	
		-	-	220kV Malbase - Birpara Line	32.82	
		-	-	66kV CHP - Chumdo Line	15.78	
		-	-	66kV CHP - Gedu Line	5.23	
		-	-	3x3MVA, 66/11kV TFR	1.47	
Total	349.19	Auxiliary Consumption & Transformation Losses at Generator end	0.32%			
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	51.90	
		Unit- II	12.10	66kV BHP - Lobeyssa Line	26.49	
		Total	24.50	220kV BHP - Tsirang Line	-14.38	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.72	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	3.99	
		Total	41.60	Auxiliary Consumption & Transformation Losses at Generator end	2.07%	
6	126MW DHP	Unit-I	43.40	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	42.99	220kV DHP - Dagapela Line	85.92	
		-	-	220kV Jigmeling - Dagapela Line	-30.36	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	86.39	Auxiliary Consumption & Transformation Losses at Gen. end	0.31%			
7	60MW KHP	Unit- I	16.56	132kV KHP - Nangkhon Line	37.46	
		Unit-II	16.44	132kV KHP - Kilikhar Line	27.30	
		Unit- III	16.58	5MVA, 132/11kV TFR	0.42	
		Unit- IV	16.48	132kV Motanga - Rangia Line	33.16	
		Total	66.06	Auxiliary Consumption & Transformation Losses at Generator end	1.33%	

Note: Generation-Load Summary (MW) for August 28, 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	1,611.45	393.24	385.60	1,204.79	7.64
2	Eastern Grid	794.58	115.03	109.21	692.97	5.82
Total		2,406.03	508.27	494.81	1,897.76	13.46

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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	1,656.42	306.42	337.15	1,251.32	-30.73
2	Eastern Grid	853.59	79.26	64.81	873.01	14.45
Total		2,510.01	385.68	401.96	2,124.33	-16.28

NOTE- MAT, MHPA & BHP 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: August 29, 2022
Hours: 09:00 Hours

Date	Time	Load(MW)
15-Aug-22	19:30 hrs	521.02

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	184.78	400kV THP - Siliguri Line - I	271.01	
		Unit- II	182.00	400kV THP - Siliguri Line - II	269.28	
		Unit- III	185.20	400kV THP - Siliguri Line- IV	262.52	
		Unit- IV	187.12	400kV THP - Malbase Line - III	300.22	
		Unit- V	185.82	400kV Malbase - Siliguri Line	250.25	
		Unit- VI	184.52	-	-	
		Total	1,109.44	Auxiliary Consumption & Transformation Losses at Generator end	0.58%	
2	720MW MHP	Unit-I	197.72	400kV MHP - Jigmeling Line - I	360.86	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	197.71	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.43	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	197.67	400kV MHP - Jigmeling Line - IV	362.25	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	20.15	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	173.48	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	258.17	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	259.13	
		-	-	80MVA, 220/132kV ICT - I (HV)	28.56	
		-	-	80MVA, 220/132kV ICT - II (HV)	29.11	
		-	-	220kV Tsirang - Jigmeling Line	-16.70	
-	-	132kV Gelephu - Salakati Line	4.80			
Total	728.53	Auxiliary Consumption & Transformation Losses at Generator end	0.74%			
3	336MW CHP	Unit- I	91.51	220kV CHP - Birpara Line- I	78.61	
		Unit- II	90.88	220kV CHP - Birpara Line- II	78.63	
		Unit- III	91.49	220kV CHP - Malbase Line- III	137.82	
		Unit- IV	75.31	220kV CHP - Semtokha Line- IV	36.99	
		-	-	220kV Malbase - Birpara Line	22.50	
		-	-	66kV CHP - Chumdo Line	10.99	
		-	-	66kV CHP - Gedu Line	5.60	
		-	-	3x3MVA, 66/11kV TFR	1.01	
Total	349.19	Auxiliary Consumption & Transformation Losses at Generator end	-0.13%			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	54.96	
		Unit- II	12.20	66kV BHP - Lobeyasa Line	25.08	
		Total	24.50	220kV BHP - Tsirang Line	-14.97	
5	40MW BHP (L/S)	Unit- I	20.40	5MVA, 66/11kV TFR	0.40	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	1.61	
		Total	41.50	Auxiliary Consumption & Transformation Losses at Generator end	0.80%	
6	126MW DHP	Unit-I	47.44	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	47.07	220kV DHP - Dagapela Line	94.00	
		-	-	220kV Jigmeling - Dagapela Line	-54.66	
		-	-	5MVA, 220/33kV TFR	0.15	
Total	94.51	Auxiliary Consumption & Transformation Losses at Generator end	0.38%			
7	60MW KHP	Unit- I	16.57	132kV KHP - Nangkhoh Line	42.65	
		Unit-II	16.65	132kV KHP - Kilikhar Line	22.57	
		Unit- III	16.49	5MVA, 132/11kV TFR	0.35	
		Unit- IV	16.62	132kV Motanga - Rangia Line	28.99	
		Total	66.33	Auxiliary Consumption & Transformation Losses at Generator end	1.15%	

Note: Generation-Load Summary (MW) for August 29, 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	1,619.14	348.38	341.54	1,232.80	6.84
2	Eastern Grid	794.86	108.25	102.07	724.57	6.18
Total		2,414.00	456.63	443.61	1,957.37	13.02

Note: Generation-Load Summary for August 29, 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	1,674.61	308.93	332.20	1,256.17	-23.27
2	Eastern Grid	855.05	76.24	71.97	888.32	4.27
Total		2,529.66	385.17	404.17	2,144.49	-19.00

Notes: 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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