

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	June 21, 2022
Hours:	19:00 Hours

Date	Time	Load(MW)
12-Jan-22	18:00hrs	492.25

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.81	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I & II under breakdown.
		Unit- II	185.27	400kV THP - Siliguri Line - II	0.00	
		Unit- III	185.24	400kV THP - Siliguri Line- IV	556.93	
		Unit- IV	185.47	400kV THP - Malbase Line - III	547.49	
		Unit- V	184.93	400kV Malbase - Siliguri Line	551.20	
		Unit- VI	185.02	-	-	
		Total	1,111.74	Auxiliary Consumption & Transformation Losses at Generator end	0.66%	
2	720MW MHP	Unit-I	197.74	400kV MHP - Jigmeling Line - I	195.90	Unit II & III under shutdown. 400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	197.44	
		Unit-IV	197.77	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)	-8.38	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	99.68	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	148.76	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	149.48	
		-	-	80MVA, 220/132kV ICT - I (HV)	22.80	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.21	
		-	-	220kV Tsirang - Jigmeling Line	91.73	
-	-	132kV Gelephu - Salakati Line	11.63			
Total	395.51	Auxiliary Consumption & Transformation Losses at Generator end	0.55%			
3	336MW CHP	Unit- I	91.42	220kV CHP - Birpara Line- I	73.00	
		Unit- II	91.03	220kV CHP - Birpara Line- II	72.88	
		Unit- III	91.33	220kV CHP - Malbase Line- III	144.84	
		Unit- IV	91.22	220kV CHP - Semtokha Line- IV	54.64	
		-	-	220kV Malbase - Birpara Line	7.38	
		-	-	66kV CHP - Chumdo Line	13.57	
		-	-	66kV CHP - Gedu Line	5.16	
		-	-	3x3MVA, 66/11kV TFR	1.33	
Total	365.00	Auxiliary Consumption & Transformation Losses at Generator end	-0.12%			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	44.74	
		Unit- II	12.10	66kV BHP - Lobeyssa Line	25.49	
		Total	24.40	220kV BHP - Tsirang Line	-5.32	
5	40MW BHP (L/S)	Unit- I	20.60	5MVA, 66/11kV TFR	0.53	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	2.20	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Generator end	1.15%	
6	126MW DHP	Unit-I	50.42	220kV DHP - Tsirang Line	99.93	220kV DHP_Dagapela Line on Standby.
		Unit-II	50.02	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	35.45	
		-	-	5MVA, 220/33kV TFR	0.50	
Total	100.44	Auxiliary Consumption & Transformation Losses at Gen. end	0.01%			
7	60MW KHP	Unit- I	16.52	132kV KHP - Nangkhoh Line	44.04	
		Unit-II	16.55	132kV KHP - Kilikhar Line	21.02	
		Unit- III	16.42	5MVA, 132/11kV TFR	0.78	
		Unit- IV	16.53	132kV Motanga - Rangia Line	15.93	
		Total	66.02	Auxiliary Consumption & Transformation Losses at Generator end	0.27%	

Note: Generation-Load Summary (MW) for June 21, 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	1,643.38	290.26	282.59	1,261.39	7.67
2	Eastern Grid	461.53	127.78	125.43	425.48	2.35
Total		2,104.91	418.04	408.02	1,686.87	10.02

Note: Generation-Load Summary for June 21, 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	1,637.38	251.46	246.71	1,299.46	4.75
2	Eastern Grid	658.82	71.74	68.09	673.54	3.65
Total		2,296.20	323.20	314.80	1,973.00	8.40

NOTE-BHP Generation 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:	June 22, 2022
Hours:	09:00 Hours

Date	Time	Load(MW)
12-Jan-22	18:00hrs	492.25

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	184.50	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I & II under breakdown.
		Unit- II	185.18	400kV THP - Siliguri Line - II	0.00	
		Unit- III	185.16	400kV THP - Siliguri Line- IV	556.23	
		Unit- IV	185.47	400kV THP - Malbase Line - III	547.07	
		Unit- V	185.36	400kV Malbase - Siliguri Line	549.93	
		Unit- VI	184.74	-	-	
		Total	1,110.41	Auxiliary Consumption & Transformation Losses at Generator end	0.64%	
2	720MW MHP	Unit-I	197.85	400kV MHP - Jigmeling Line - I	293.97	Unit III under shutdown. 400kV MHP-JLG Line II & IV on 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	0.00	400kV MHP - Jigmeling Line - III	295.67	
		Unit-IV	197.84	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)	-10.84	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	148.03	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	221.68	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	222.96	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.68	
		-	-	80MVA, 220/132kV ICT - II (HV)	22.01	
		-	-	220kV Tsirang - Jigmeling Line	89.75	
-	-	132kV Gelephu - Salakati Line	11.85			
Total	593.55	Auxiliary Consumption & Transformation Losses at Generator end	0.66%			
3	336MW CHP	Unit- I	91.52	220kV CHP - Birpara Line- I	82.35	
		Unit- II	91.21	220kV CHP - Birpara Line- II	82.33	
		Unit- III	91.21	220kV CHP - Malbase Line- III	160.36	
		Unit- IV	91.43	220kV CHP - Semtokha Line- IV	23.17	
		-	-	220kV Malbase - Birpara Line	10.34	
		-	-	66kV CHP - Chumdo Line	9.18	
		-	-	66kV CHP - Gedu Line	6.49	
		-	-	3x3MVA, 66/11kV TFR	0.88	
Total	365.37	Auxiliary Consumption & Transformation Losses at Generator end	0.17%			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	66.60	
		Unit- II	12.10	66kV BHP - Lobeyasa Line	25.07	
		Total	24.40	220kV BHP - Tsirang Line	-26.40	
5	40MW BHP (L/S)	Unit- I	20.60	5MVA, 66/11kV TFR	0.36	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	1.63	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Generator end	0.86%	
6	126MW DHP	Unit-I	60.45	220kV DHP - Tsirang Line	119.82	220kV DHP_Dagapela Line on Standby. Dagapela DHI load reduced to 0 MW.
		Unit-II	60.01	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	34.78	
		-	-	5MVA, 220/33kV TFR	0.62	
Total	120.46	Auxiliary Consumption & Transformation Losses at Generator end	0.02%			
7	60MW KHP	Unit- I	16.47	132kV KHP - Nangkhoh Line	44.26	
		Unit-II	16.64	132kV KHP - Kilikhar Line	20.68	
		Unit- III	16.26	5MVA, 132/11kV TFR	0.47	
		Unit- IV	16.55	132kV Motanga - Rangia Line	16.17	
		Total	65.92	Auxiliary Consumption & Transformation Losses at Generator end	0.77%	

Note: Generation-Load Summary (MW) for June 22, 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	1,662.44	291.51	283.20	1,281.18	8.31
2	Eastern Grid	659.47	128.53	124.11	620.69	4.42
Total		2,321.91	420.04	407.31	1,901.87	12.73

Note: Generation-Load Summary for June 22, 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	1,600.97	252.86	246.65	1,284.89	6.21
2	Eastern Grid	658.86	67.04	63.19	655.04	3.85
Total		2,259.83	319.90	309.84	1,939.93	10.06

NOTE-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.
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