

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	July 10, 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	165.44	400kV THP - Siliguri Line - I	0.00	Unit V on standby. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	127.15	400kV THP - Siliguri Line - II	0.00	
		Unit- III	183.29	400kV THP - Siliguri Line- IV	400.76	
		Unit- IV	167.50	400kV THP - Malbase Line - III	395.31	
		Unit- V	0.00	400kV Malbase - Siliguri Line	398.31	
		Unit- VI	159.28	-	-	
		Total	802.66	Auxiliary Consumption & Transformation Losses at Generator end	0.82%	
2	720MW MHP	Unit-I	150.16	400kV MHP - Jigmeling Line - I	228.44	Unit III under shutdown. 400kV MHP-JLG line II & 400kV MHP-JLG Line IV on Standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line I (Interim) on standby.
		Unit-II	150.26	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	229.82	
		Unit-IV	160.60	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)	94.50	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	113.44	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	144.80	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	146.50	
		-	-	80MVA, 220/132kV ICT - I (HV)	34.80	
		-	-	80MVA, 220/132kV ICT - II (HV)	35.60	
		-	-	220kV Tsirang - Jigmeling Line	37.70	
-	-	132kV Gelephu - Salakati Line	7.60			
Total	461.02	Auxiliary Consumption & Transformation Losses at Generator end	0.60%			
3	336MW CHP	Unit- I	91.47	220kV CHP - Birpara Line- I	42.29	Unit IV under Shutdown.
		Unit- II	88.97	220kV CHP - Birpara Line- II	42.15	
		Unit- III	90.69	220kV CHP - Malbase Line- III	116.15	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	49.41	
		-	-	220kV Malbase - Birpara Line	-20.21	
		-	-	66kV CHP - Chumdo Line	12.88	
		-	-	66kV CHP - Gedu Line	4.93	
		-	-	3x3MVA, 66/11kV TFR	1.28	
Total	271.13	Auxiliary Consumption & Transformation Losses at Generator end	0.75%			
4	24MW BHP (U/S)	Unit- I	9.60	220kV BHP - Semtokha Line	47.00	
		Unit- II	9.20	66kV BHP - Lobeyasa Line	23.11	
		Total	18.80	220kV BHP - Tsirang Line	-16.51	
5	40MW BHP (L/S)	Unit- I	17.90	5MVA, 66/11kV TFR	0.57	
		Unit- II	17.60	30MVA ICT, 220/66kV (HV)	5.24	
		Total	35.50	Auxiliary Consumption & Transformation Losses at Generator end	0.24%	
6	126MW DHP	Unit-I	56.90	220kV DHP - Tsirang Line	56.65	DHP unit II on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	35.80	
		-	-	5MVA, 220/33kV TFR	0.40	
Total	56.90	Auxiliary Consumption & Transformation Losses at Gen. end	-0.26%			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	41.30	
		Unit-II	16.50	132kV KHP - Kilikhar Line	23.80	
		Unit- III	16.40	5MVA, 132/11kV TFR	0.41	
		Unit- IV	16.50	132kV Motanga - Rangia Line	23.30	
		Total	65.90	Auxiliary Consumption & Transformation Losses at Generator end	0.59%	

Note: Generation-Load Summary (MW) for July 10, 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	1,184.99	283.99	275.38	863.30	8.61
2	Eastern Grid	526.92	128.98	125.83	435.64	3.15
Total		1,711.91	412.97	401.21	1,298.94	11.76

Note: Generation-Load Summary for July 10, 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	1,662.18	256.85	253.03	1,295.03	3.82
2	Eastern Grid	659.20	69.24	65.17	700.26	4.07
Total		2,321.38	326.09	318.20	1,995.29	7.89

NOTES: 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:	July 11, 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	166.01	400kV THP - Siliguri Line - I	0.00	Unit-V under maintenance 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	126.99	400kV THP - Siliguri Line - II	0.00	
		Unit- III	237.61	400kV THP - Siliguri Line- IV	389.69	
		Unit- IV	178.57	400kV THP - Malbase Line - III	385.05	
		Unit- V	0.00	400kV Malbase - Siliguri Line	384.91	
		Unit- VI	180.31	-	-	
		Total	889.49	Auxiliary Consumption & Transformation Losses at Generator end	12.90%	
2	720MW MHP	Unit-I	189.84	400kV MHP - Jigmeling Line - I	282.39	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 I (Interim) on standby
		Unit-II	189.88	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	284.02	
		Unit-IV	190.28	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)	47.60	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	124.40	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	191.80	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	192.40	
		-	-	80MVA, 220/132kV ICT - I (HV)	22.70	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.10	
		-	-	220kV Tsirang - Jigmeling Line	32.80	
-	-	132kV Gelephu - Salakati Line	7.30			
Total	570.00	Auxiliary Consumption & Transformation Losses at Generator end	0.63%			
3	336MW CHP	Unit- I	91.53	220kV CHP - Birpara Line- I	49.75	Unit IV under Shutdown.
		Unit- II	88.96	220kV CHP - Birpara Line- II	49.74	
		Unit- III	91.97	220kV CHP - Malbase Line- III	116.62	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	37.82	
		-	-	220kV Malbase - Birpara Line	-9.12	
		-	-	66kV CHP - Chumdo Line	10.44	
		-	-	66kV CHP - Gedu Line	5.18	
		-	-	3x3MVA, 66/11kV TFR	0.80	
Total	272.46	Auxiliary Consumption & Transformation Losses at Generator end	0.77%			
4	24MW BHP (U/S)	Unit- I	9.40	220kV BHP - Semtokha Line	51.83	
		Unit- II	9.00	66kV BHP - Lobeyasa Line	22.23	
		Total	18.40	220kV BHP - Tsirang Line	-20.41	
5	40MW BHP (L/S)	Unit- I	18.00	5MVA, 66/11kV TFR	0.40	
		Unit- II	18.00	30MVA ICT, 220/66kV (HV)	4.66	
		Total	36.00	Auxiliary Consumption & Transformation Losses at Generator end	0.64%	
6	126MW DHP	Unit-I	55.44	220kV DHP - Tsirang Line	55.12	Unit-II on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	35.00	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	55.44	Auxiliary Consumption & Transformation Losses at Generator end	0.04%			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	43.10	
		Unit-II	16.60	132kV KHP - Kilikhar Line	22.00	
		Unit- III	16.40	5MVA, 132/11kV TFR	0.38	
		Unit- IV	16.60	132kV Motanga - Rangia Line	32.80	
		Total	66.10	Auxiliary Consumption & Transformation Losses at Generator end	0.94%	

Note: Generation-Load Summary (MW) for July 11, 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	1,271.79	374.02	256.79	864.97	117.23
2	Eastern Grid	636.10	120.20	115.99	548.70	4.21
Total		1,907.89	494.22	372.78	1,413.67	121.44

Note: Generation-Load Summary for July 11, 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	1,671.89	265.20	258.63	1,288.11	6.57
2	Eastern Grid	659.09	59.66	55.66	718.01	4.00
Total		2,330.98	324.86	314.29	2,006.12	10.57

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.