

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	July 23, 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	185.78	400kV THP - Siliguri Line - I	0.00	Unit III tripped at 17:58 hrs 400kV THP-Siliguri line II tripped at 16:43hrs. 400kV THP-Siliguri line I under breakdown.
		Unit- II	185.54	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	463.13	
		Unit- IV	184.44	400kV THP - Malbase Line - III	453.90	
		Unit- V	181.21	400kV Malbase - Siliguri Line	458.52	
		Unit- VI	185.13	-	-	
		Total	922.10	Auxiliary Consumption & Transformation Losses at Generator end	0.55%	
2	720MW MHP	Unit-I	197.83	400kV MHP - Jigmeling Line - I	294.02	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	197.80	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.91	
		Unit-IV	197.73	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)	41.10	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	133.80	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	202.78	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	203.54	
		-	-	80MVA, 220/132kV ICT - I (HV)	38.03	
		-	-	80MVA, 220/132kV ICT - II (HV)	38.43	
		-	-	220kV Tsirang - Jigmeling Line	82.17	
-	-	132kV Gelephu - Salakati Line	7.66			
Total	593.36	Auxiliary Consumption & Transformation Losses at Generator end	0.58%			
3	336MW CHP	Unit- I	91.74	220kV CHP - Birpara Line- I	55.96	Unit IV under Shutdown.
		Unit- II	91.22	220kV CHP - Birpara Line- II	56.23	
		Unit- III	91.45	220kV CHP - Malbase Line- III	124.26	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	17.67	
		-	-	220kV Malbase - Birpara Line	-4.48	
		-	-	66kV CHP - Chumdo Line	12.72	
		-	-	66kV CHP - Gedu Line	4.99	
		-	-	3x3MVA, 66/11kV TFR	1.17	
Total	274.41	Auxiliary Consumption & Transformation Losses at Generator end	0.51%			
4	24MW BHP (U/S)	Unit- I	11.86	220kV BHP - Semtokha Line	79.65	
		Unit- II	11.86	66kV BHP - Lobeyasa Line	26.37	
		Total	23.72	220kV BHP - Tsirang Line	-40.63	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.58	
		Unit- II	21.06	30MVA ICT, 220/66kV (HV)	3.80	
		Total	41.56	Auxiliary Consumption & Transformation Losses at Generator end	-1.06%	
6	126MW DHP	Unit-I	63.66	220kV DHP - Tsirang Line	126.21	220kV DHP_Dagapela Line on Standby.
		Unit-II	63.22	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	45.55	
		-	-	5MVA, 220/33kV TFR	0.80	
Total	126.88	Auxiliary Consumption & Transformation Losses at Gen. end	-0.10%			
7	60MW KHP	Unit- I	14.55	132kV KHP - Nangkhoh Line	36.73	
		Unit-II	14.96	132kV KHP - Kilikhar Line	23.78	
		Unit- III	15.43	5MVA, 132/11kV TFR	0.50	
		Unit- IV	16.28	132kV Motanga - Rangia Line	29.33	
		Total	61.22	Auxiliary Consumption & Transformation Losses at Generator end	0.34%	

Note: Generation-Load Summary (MW) for July 23, 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	1,388.67	277.14	271.48	1,029.36	5.66
2	Eastern Grid	654.58	159.64	156.00	577.11	3.64
Total		2,043.25	436.78	427.48	1,606.47	9.30

Note: Generation-Load Summary for July 23, 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	619.06	245.29	241.98	284.25	3.31
2	Eastern Grid	659.65	77.53	73.15	671.64	4.38
Total		1,278.71	322.82	315.13	955.89	7.69

NOTES:

- 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 24, 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	185.18	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I & II under breakdown.
		Unit- II	184.35	400kV THP - Siliguri Line - II	0.00	
		Unit- III	186.26	400kV THP - Siliguri Line- IV	557.57	
		Unit- IV	184.73	400kV THP - Malbase Line - III	546.98	
		Unit- V	185.19	400kV Malbase - Siliguri Line	551.02	
		Unit- VI	184.83	-	-	
		Total	1,110.54	Auxiliary Consumption & Transformation Losses at Generator end	0.54%	
2	720MW MHP	Unit-I	197.84	400kV MHP - Jigmeling Line - I	294.08	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	197.74	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.81	
		Unit-IV	197.69	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)	34.38	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	134.80	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	206.15	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	205.81	
		-	-	80MVA, 220/132kV ICT - I (HV)	26.87	
		-	-	80MVA, 220/132kV ICT - II (HV)	27.35	
		-	-	220kV Tsirang - Jigmeling Line	64.44	
-	-	132kV Gelephu - Salakati Line	5.60			
Total	593.27	Auxiliary Consumption & Transformation Losses at Generator end	0.57%			
3	336MW CHP	Unit- I	91.74	220kV CHP - Birpara Line- I	55.60	Unit IV under Shutdown.
		Unit- II	91.79	220kV CHP - Birpara Line- II	55.35	
		Unit- III	91.45	220kV CHP - Malbase Line- III	127.68	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	18.71	
		-	-	220kV Malbase - Birpara Line	-13.70	
		-	-	66kV CHP - Chumdo Line	11.05	
		-	-	66kV CHP - Gedu Line	5.16	
		-	-	3x3MVA, 66/11kV TFR	1.03	
Total	274.98	Auxiliary Consumption & Transformation Losses at Generator end	0.15%			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	77.50	
		Unit- II	12.10	66kV BHP - Lobeyasa Line	25.94	
		Total	24.40	220kV BHP - Tsirang Line	-37.98	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.40	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	2.47	
		Total	41.70	Auxiliary Consumption & Transformation Losses at Generator end	0.36%	
6	126MW DHP	Unit-I	63.63	220kV DHP - Tsirang Line	126.29	220kV DHP_Dagapela Line on Standby.
		Unit-II	63.27	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	44.66	
		-	-	5MVA, 220/33kV TFR	0.59	
Total	126.90	Auxiliary Consumption & Transformation Losses at Generator end	0.02%			
7	60MW KHP	Unit- I	14.15	132kV KHP - Nangkhoh Line	37.42	
		Unit-II	14.14	132kV KHP - Kilikhar Line	20.68	
		Unit- III	14.84	5MVA, 132/11kV TFR	0.26	
		Unit- IV	15.51	132kV Motanga - Rangia Line	26.05	
		Total	58.64	Auxiliary Consumption & Transformation Losses at Generator end	0.48%	

Note: Generation-Load Summary (MW) for July 24, 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	1,578.52	308.24	301.59	1,205.84	6.65
2	Eastern Grid	651.91	137.94	134.28	578.41	3.66
Total		2,230.43	446.18	435.87	1,784.25	10.31

Note: Generation-Load Summary for July 24, 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	932.30	249.57	245.38	584.47	4.19
2	Eastern Grid	659.38	72.60	68.77	685.04	3.83
Total		1,591.68	322.17	314.15	1,269.51	8.02

NOTES: MHP and KHP 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.