

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	July 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	186.49	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I under breakdown.
		Unit- II	185.03	400kV THP - Siliguri Line - II	263.35	
		Unit- III	118.89	400kV THP - Siliguri Line - IV	251.81	
		Unit- IV	99.08	400kV THP - Malbase Line - III	322.76	
		Unit- V	68.95	400kV Malbase - Siliguri Line	235.13	
		Unit- VI	184.96	-	-	
		Total	843.40	Auxiliary Consumption & Transformation Losses at Generator end	0.65%	
2	720MW MHP	Unit-I	197.88	400kV MHP - Jigmeling Line - I	294.22	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	197.88	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	296.07	
		Unit-IV	197.70	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)	58.45	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	129.44	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	197.49	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	195.92	
		-	-	80MVA, 220/132kV ICT - I (HV)	40.34	
		-	-	80MVA, 220/132kV ICT - II (HV)	41.13	
		-	-	220kV Tsirang - Jigmeling Line	71.19	
-	-	132kV Gelephu - Salakati Line	13.70			
Total	593.46	Auxiliary Consumption & Transformation Losses at Generator end	0.53%			
3	336MW CHP	Unit- I	91.74	220kV CHP - Birpara Line- I	67.90	Unit IV under Shutdown.
		Unit- II	91.22	220kV CHP - Birpara Line- II	67.75	
		Unit- III	91.45	220kV CHP - Malbase Line- III	86.15	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	31.78	
		-	-	220kV Malbase - Birpara Line	45.10	
		-	-	66kV CHP - Chumdo Line	13.86	
		-	-	66kV CHP - Gedu Line	4.65	
		-	-	3x3MVA, 66/11kV TFR	1.37	
Total	274.41	Auxiliary Consumption & Transformation Losses at Generator end	0.35%			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	69.60	
		Unit- II	12.10	66kV BHP - Lobeyasa Line	26.40	
		Total	24.40	220kV BHP - Tsirang Line	-31.07	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.37	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	2.36	
		Total	41.60	Auxiliary Consumption & Transformation Losses at Generator end	1.06%	
6	126MW DHP	Unit-I	53.43	220kV DHP - Tsirang Line	105.93	220kV DHP_Dagapela Line on Standby.
		Unit-II	53.02	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	46.29	
		-	-	5MVA, 220/33kV TFR	0.51	
Total	106.45	Auxiliary Consumption & Transformation Losses at Gen. end	0.01%			
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhoh Line	37.68	
		Unit-II	16.51	132kV KHP - Kilikhar Line	26.13	
		Unit- III	15.40	5MVA, 132/11kV TFR	0.57	
		Unit- IV	16.43	132kV Motanga - Rangia Line	31.97	
		Total	64.83	Auxiliary Consumption & Transformation Losses at Generator end	0.69%	

Note: Generation-Load Summary (MW) for July 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	1,290.26	288.03	280.89	931.04	7.14
2	Eastern Grid	658.29	160.96	157.34	568.52	3.62
Total		1,948.55	448.99	438.23	1,499.56	10.76

Note: Generation-Load Summary for July 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	558.96	258.74	257.75	201.87	0.99
2	Eastern Grid	659.39	60.87	56.38	696.87	4.49
Total		1,218.35	319.61	314.13	898.74	5.48

NOTES: BHP Generation 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 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	185.99	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I under breakdown.
		Unit- II	184.11	400kV THP - Siliguri Line - II	356.99	
		Unit- III	186.53	400kV THP - Siliguri Line- IV	342.21	
		Unit- IV	185.29	400kV THP - Malbase Line - III	405.90	
		Unit- V	183.89	400kV Malbase - Siliguri Line	325.02	
		Unit- VI	185.88	-	-	
		Total	1,111.69	Auxiliary Consumption & Transformation Losses at Generator end	0.59%	
2	720MW MHP	Unit-I	197.95	400kV MHP - Jigmeling Line - I	294.21	Unit III under shutdown. 400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I & II not in service. 500MVA, 400/220kV ICT under shutdown. 400kV JLG_ALI Line I (Interim) on standby
		Unit-II	197.95	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	295.90	
		Unit-IV	197.88	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)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	143.26	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	217.80	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	218.95	
		-	-	80MVA, 220/132kV ICT - I (HV)	25.23	
		-	-	80MVA, 220/132kV ICT - II (HV)	25.80	
		-	-	220kV Tsirang - Jigmeling Line	96.74	
-	-	132kV Gelephu - Salakati Line	2.12			
Total	593.78	Auxiliary Consumption & Transformation Losses at Generator end	0.62%			
3	336MW CHP	Unit- I	91.74	220kV CHP - Birpara Line- I	68.23	Unit IV under Shutdown.
		Unit- II	91.22	220kV CHP - Birpara Line- II	68.47	
		Unit- III	91.45	220kV CHP - Malbase Line- III	93.39	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	24.69	
		-	-	220kV Malbase - Birpara Line	40.53	
		-	-	66kV CHP - Chumdo Line	10.66	
		-	-	66kV CHP - Gedu Line	5.22	
		-	-	3x3MVA, 66/11kV TFR	0.90	
Total	274.41	Auxiliary Consumption & Transformation Losses at Generator end	1.04%			
4	24MW BHP (U/S)	Unit- I	11.85	220kV BHP - Semtokha Line	66.51	
		Unit- II	11.85	66kV BHP - Lobeyasa Line	24.91	
		Total	23.70	220kV BHP - Tsirang Line	-25.90	
5	40MW BHP (L/S)	Unit- I	20.57	5MVA, 66/11kV TFR	0.37	
		Unit- II	21.09	30MVA ICT, 220/66kV (HV)	1.50	
		Total	41.66	Auxiliary Consumption & Transformation Losses at Generator end	-0.81%	
6	126MW DHP	Unit-I	63.66	220kV DHP - Tsirang Line	126.29	220kV DHP_Dagapela Line on Standby.
		Unit-II	63.20	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	45.10	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	126.86	Auxiliary Consumption & Transformation Losses at Generator end	0.29%			
7	60MW KHP	Unit- I	15.61	132kV KHP - Nangkhoh Line	38.76	
		Unit-II	16.13	132kV KHP - Kilikhar Line	20.61	
		Unit- III	13.95	5MVA, 132/11kV TFR	0.45	
		Unit- IV	14.77	132kV Motanga - Rangia Line	18.97	
		Total	60.46	Auxiliary Consumption & Transformation Losses at Generator end	1.06%	

Note: Generation-Load Summary (MW) for July 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	1,578.32	280.13	270.85	1,201.45	9.28
2	Eastern Grid	654.24	149.88	145.57	601.10	4.31
Total		2,232.56	430.01	416.42	1,802.55	13.59

Note: Generation-Load Summary for July 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	559.62	266.88	265.46	192.27	1.42
2	Eastern Grid	659.02	67.68	64.14	691.81	3.54
Total		1,218.64	334.56	329.60	884.08	4.96

NOTES: 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.