

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	May 22, 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	127.42	400kV THP - Siliguri Line - I	0.00	Unit- II on standby. Unit VI under shutdown. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	129.52	400kV THP - Siliguri Line- IV	222.59	
		Unit- IV	99.55	400kV THP - Malbase Line - III	297.40	
		Unit- V	167.83	400kV Malbase - Siliguri Line	209.37	
		Unit- VI	0.00	-	-	
		Total	524.32	Auxiliary Consumption & Transformation Losses at Generator end	0.83%	
2	720MW MHP	Unit-I	100.23	400kV MHP - Jigmeling Line - I	0.00	Unit- IV on Standby. 400kV MHP-JLG Line I & 400kV MHP-JLG Line III on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	100.21	400kV MHP - Jigmeling Line - II	151.59	
		Unit-III	105.32	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	152.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	53.05	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	99.01	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	149.78	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	28.08	
		-	-	80MVA, 220/132kV ICT - II (HV)	28.54	
		-	-	220kV Tsirang - Jigmeling Line	5.68	
-	-	132kV Gelephu - Salakati Line	5.58			
Total	305.76	Auxiliary Consumption & Transformation Losses at Generator end	0.71%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	47.79	Unit-I on Standby.
		Unit- II	80.96	220kV CHP - Birpara Line- II	47.64	
		Unit- III	82.49	220kV CHP - Malbase Line- III	75.08	
		Unit- IV	79.09	220kV CHP - Semtokha Line- IV	49.94	
		-	-	220kV Malbase - Birpara Line	20.16	
		-	-	66kV CHP - Chumdo Line	15.63	
		-	-	66kV CHP - Gedu Line	4.44	
		-	-	3x3MVA, 66/11kV TFR	4.58	
Total	242.54	Auxiliary Consumption & Transformation Losses at Generator end	-1.06%			
4	24MW BHP (U/S)	Unit- I	9.10	220kV BHP - Semtokha Line	60.00	
		Unit- II	8.70	66kV BHP - Lobeyasa Line	25.21	
		Total	17.80	220kV BHP - Tsirang Line	-27.89	
5	40MW BHP (L/S)	Unit- I	20.20	5MVA, 66/11kV TFR	0.65	
		Unit- II	20.20	30MVA ICT, 220/66kV (HV)	8.45	
		Total	40.40	Auxiliary Consumption & Transformation Losses at Generator end	0.40%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	42.72	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	42.98	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	0.65	
		-	-	5MVA, 220/33kV TFR	0.15	
Total	42.98	Auxiliary Consumption & Transformation Losses at Gen. end	0.26%			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	41.82	
		Unit-II	16.54	132kV KHP - Kilikhar Line	23.04	
		Unit- III	16.59	5MVA, 132/11kV TFR	0.36	
		Unit- IV	16.52	132kV Motanga - Rangia Line	36.66	
		Total	66.15	Auxiliary Consumption & Transformation Losses at Generator end	1.41%	

Note: Generation-Load Summary (MW) for May 22, 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	868.04	314.81	312.70	547.55	2.11
2	Eastern Grid	371.91	86.56	83.46	291.03	3.10
Total		1,239.95	401.37	396.16	838.58	5.21

Note: Generation-Load Summary for May 22, 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	507.58	207.40	201.07	283.05	6.33
2	Eastern Grid	386.21	67.01	64.99	336.63	2.02
Total		893.79	274.41	266.06	619.68	8.35

NOTE- BHP 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:	May 23, 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	127.38	400kV THP - Siliguri Line - I	0.00	Unit-II on standby. Unit-VI under Shutdown. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	80.14	400kV THP - Siliguri Line- IV	242.84	
		Unit- IV	167.33	400kV THP - Malbase Line - III	295.62	
		Unit- V	169.18	400kV Malbase - Siliguri Line	233.73	
		Unit- VI	0.00	-	-	
		Total	544.03	Auxiliary Consumption & Transformation Losses at Generator end	1.02%	
2	720MW MHP	Unit-I	149.82	400kV MHP - Jigmeling Line - I	0.00	Unit-II on standby. 400kV MHP-JLG Line I & 400kV MHP-JLG Line III on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	191.40	
		Unit-III	150.59	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	85.07	400kV MHP - Jigmeling Line - IV	191.87	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	56.25	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	128.94	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	195.13	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.34	
		-	-	80MVA, 220/132kV ICT - II (HV)	17.61	
		-	-	220kV Tsirang - Jigmeling Line	-13.86	
-	-	132kV Gelephu - Salakati Line	3.14			
Total	385.48	Auxiliary Consumption & Transformation Losses at Generator end	0.57%			
3	336MW CHP	Unit- I	69.65	220kV CHP - Birpara Line- I	56.89	
		Unit- II	68.21	220kV CHP - Birpara Line- II	56.74	
		Unit- III	70.03	220kV CHP - Malbase Line- III	92.60	
		Unit- IV	69.00	220kV CHP - Semtokha Line- IV	52.08	
		-	-	220kV Malbase - Birpara Line	20.59	
		-	-	66kV CHP - Chumdo Line	12.39	
		-	-	66kV CHP - Gedu Line	4.58	
		-	-	3x3MVA, 66/11kV TFR	0.83	
Total	276.89	Auxiliary Consumption & Transformation Losses at Generator end	0.28%			
4	24MW BHP (U/S)	Unit- I	5.20	220kV BHP - Semtokha Line	44.80	
		Unit- II	4.70	66kV BHP - Lobeysa Line	20.14	
		Total	9.90	220kV BHP - Tsirang Line	-33.84	
5	40MW BHP (L/S)	Unit- I	10.70	5MVA, 66/11kV TFR	0.35	
		Unit- II	10.80	30MVA ICT, 220/66kV (HV)	10.73	
		Total	21.50	Auxiliary Consumption & Transformation Losses at Generator end	-0.16%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	27.73	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	27.98	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	8.87	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	27.98	Auxiliary Consumption & Transformation Losses at Generator end	0.18%			
7	60MW KHP	Unit- I	16.44	132kV KHP - Nangkhoh Line	60.33	
		Unit-II	16.47	132kV KHP - Kilikhar Line	4.68	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.42	
		Unit- IV	16.51	132kV Motanga - Rangia Line	33.59	
		Total	65.92	Auxiliary Consumption & Transformation Losses at Generator end	0.74%	

Note: Generation-Load Summary (MW) for May 23, 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	880.30	283.37	277.02	610.79	6.35
2	Eastern Grid	451.40	76.74	74.04	360.80	2.70
Total		1,331.70	360.11	351.06	971.59	9.05

Note: Generation-Load Summary for May 23, 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	427.70	212.59	203.91	209.24	8.68
2	Eastern Grid	476.94	51.49	48.87	431.32	2.62
Total		904.64	264.08	252.78	640.56	11.30

NOTE-BHP 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.