

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: February 14, 2022
Hours: 18:00 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	0.00	400kV THP - Siliguri Line - I	0.00	THP under total Shutdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	0.00	400kV THP - Malbase Line - III	0.00	
		Unit- V	0.00	400kV Malbase - Siliguri Line	-44.36	
		Unit- VI	0.00	-	-	
		Total	0.00	Auxiliary Consumption & Transformation Losses at Generator end	0.00%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	239.89	Unit-II on Standby. Unit-I under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby. 400kV JLG_ALI Line I (Direct) on Standby. 400kV JLG_ALI Line I (Direct) under Breakdown.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	115.68	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	125.20	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)	103.13	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	53.97	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	80.31	
		-	-	80MVA, 220/132kV ICT - I (HV)	15.80	
		-	-	80MVA, 220/132kV ICT - II (HV)	16.01	
		-	-	220kV Tsirang - Jigmeling Line	-80.99	
-	-	132kV Gelephu - Salakati Line	-12.07			
Total	240.88	Auxiliary Consumption & Transformation Losses at Generator end	0.41%			
3	336MW CHP	Unit- I	91.18	220kV CHP - Birpara Line- I	5.19	Unit-II on Standby. Unit-III under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Line- II	5.27	
		Unit- III	0.00	220kV CHP - Malbase Line- III	78.13	
		Unit- IV	90.91	220kV CHP - Semtokha Line- IV	67.90	
		-	-	220kV Malbase - Birpara Line	-52.34	
		-	-	66kV CHP - Chumdo Line	18.53	
		-	-	66kV CHP - Gedu Line	2.87	
		-	-	3x3MVA, 66/11kV TFR	1.73	
Total	182.09	Auxiliary Consumption & Transformation Losses at Generator end	1.36%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	68.10	U/S and L/S Unit-I under maintenance.
		Unit- II	7.40	66kV BHP - Lobeyasa Line	25.69	
		Total	7.40	220kV BHP - Tsirang Line	-76.83	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.77	U/S and L/S Unit-I under maintenance.
		Unit- II	10.00	30MVA ICT, 220/66kV (HV)	19.23	
		Total	10.00	Auxiliary Consumption & Transformation Losses at Generator end	-1.90%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00	Unit-I under Annual Maintenance. 220kV DHP-Tsirang Line on Standby.
		Unit-II	26.97	220kV DHP - Dagapela Line	26.78	
		-	-	220kV Jigmeling - Dagapela Line	-10.96	
		-	-	5MVA, 220/33kV TFR	0.18	
Total	26.97	Auxiliary Consumption & Transformation Losses at Gen. end	0.04%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	5.13	Unit-II on Standby. Unit-I under AMP.
		Unit-II	0.00	132kV KHP - Kilikhar Line	14.05	
		Unit- III	10.10	5MVA, 132/11kV TFR	0.78	
		Unit- IV	10.06	132kV Motanga - Rangia Line	-4.47	
		Total	20.16	Auxiliary Consumption & Transformation Losses at Generator end	0.99%	

Note: Generation-Load Summary (MW) for February 14, 2022 at 18:00hrs.

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	226.46	393.69	391.54	-86.24	2.15
2	Eastern Grid	261.04	62.31	61.12	117.74	1.19
Total		487.50	456.00	452.66	31.50	3.34

Note: Generation-Load Summary for February 14, 2021 at 18:00hrs.

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	276.79	249.20	243.43	39.83	5.77
2	Eastern Grid	120.07	43.78	43.13	64.05	0.65
Total		396.86	292.98	286.56	103.88	6.42

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.
- 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: February 15, 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	0.00	400kV THP - Siliguri Line - I	0.00	THP under total shutdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	0.00	400kV THP - Malbase Line - III	0.00	
		Unit- V	0.00	400kV Malbase - Siliguri Line	-55.30	
		Unit- VI	0.00	-	-	
		Total	0.00	Auxiliary Consumption & Transformation Losses at Generator end	0.00%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	212.82	Unit-I & II under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby. 400kV JLG_ALI Line I (Direct) under Breakdown.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	118.27	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	95.41	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)	83.03	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	50.44	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	76.96	
		-	-	80MVA, 220/132kV ICT - I (HV)	13.70	
		-	-	80MVA, 220/132kV ICT - II (HV)	13.93	
		-	-	220kV Tsirang - Jigmeling Line	-71.54	
-	-	132kV Gelephu - Salakati Line	-6.23			
Total	213.68	Auxiliary Consumption & Transformation Losses at Generator end	0.40%			
3	336MW CHP	Unit- I	83.22	220kV CHP - Birpara Line- I	5.53	Unit-II on Standby. Unit-III under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Line- II	5.59	
		Unit- III	0.00	220kV CHP - Malbase Line- III	71.85	
		Unit- IV	80.19	220kV CHP - Semtokha Line- IV	56.49	
		-	-	220kV Malbase - Birpara Line	-47.01	
		-	-	66kV CHP - Chumdo Line	18.25	
		-	-	66kV CHP - Gedu Line	1.81	
		-	-	3x3MVA, 66/11kV TFR	1.53	
Total	163.41	Auxiliary Consumption & Transformation Losses at Generator end	1.44%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	89.10	U/S and L/S Unit-I under maintenance. 66kV BHP_Lobeyssa Line opened at 7:13hrs due to forest fire at Gewathang .
		Unit- II	7.60	66kV BHP - Lobeyssa Line	0.00	
		Total	7.60	220kV BHP - Tsirang Line	-67.83	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.49	
		Unit- II	14.10	30MVA ICT, 220/66kV (HV)	-6.76	
		Total	14.10	Auxiliary Consumption & Transformation Losses at Generator end	-0.28%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00	Unit-I under Annual Maintenance. 220kV DHP_Tsirang Line on Standby.
		Unit-II	30.98	220kV DHP - Dagapela Line	30.80	
		-	-	220kV Jigmeling - Dagapela Line	-15.31	
		-	-	5MVA, 220/33kV TFR	0.17	
Total	30.98	Auxiliary Consumption & Transformation Losses at Generator end	0.03%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	11.73	Unit-II on Standby. Unit-I under AMP.
		Unit-II	0.00	132kV KHP - Kilikhar Line	14.38	
		Unit- III	13.53	5MVA, 132/11kV TFR	0.79	
		Unit- IV	13.55	132kV Motanga - Rangia Line	7.69	
		Total	27.08	Auxiliary Consumption & Transformation Losses at Generator end	0.66%	

Note: Generation-Load Summary (MW) for February 15, 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	216.09	378.82	376.51	-91.19	2.31
2	Eastern Grid	240.76	40.36	39.32	128.86	1.04
Total		456.85	419.18	415.83	37.67	3.35

Note: Generation-Load Summary for February 15, 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	270.48	243.55	237.83	37.63	5.72
2	Eastern Grid	116.18	29.62	29.26	75.86	0.36
Total		386.66	273.17	267.09	113.49	6.08

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.
- 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.