

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: February 25, 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	-42.36	
		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	215.32	Unit-I & II under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG-ALI I (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	76.56	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	139.52	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)	90.74	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	46.54	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	73.37	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.27	
		-	-	80MVA, 220/132kV ICT - II (HV)	17.51	
		-	-	220kV Tsirang - Jigmeling Line	-76.03	
-	-	132kV Gelephu - Salakati Line	-9.62			
Total	216.08	Auxiliary Consumption & Transformation Losses at Generator end	0.35%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	2.74	Unit-I Under maintenance Unit III on Standby.
		Unit- II	87.22	220kV CHP - Birpara Line- II	2.62	
		Unit- III	0.00	220kV CHP - Malbase Line- III	65.17	
		Unit- IV	87.38	220kV CHP - Semtokha Line- IV	78.00	
		-	-	220kV Malbase - Birpara Line	-45.15	
		-	-	66kV CHP - Chumdo Line	21.16	
		-	-	66kV CHP - Gedu Line	1.40	
		-	-	3x3MVA, 66/11kV TFR	1.77	
Total	174.60	Auxiliary Consumption & Transformation Losses at Generator end	1.00%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	65.30	U/S Unit-I under maintenance. L/S Unit-II on Standby.
		Unit- II	6.70	66kV BHP - Lobeyasa Line	26.05	
		Total	6.70	220kV BHP - Tsirang Line	-71.48	
5	40MW BHP (L/S)	Unit- I	13.60	5MVA, 66/11kV TFR	0.76	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	20.21	
		Total	13.60	Auxiliary Consumption & Transformation Losses at Generator end	-1.63%	
6	126MW DHP	Unit-I	23.67	220kV DHP - Tsirang Line	0.00	Unit-II under Annual Maintenance. 220kV DHP_Tsirang Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	23.46	
		-	-	220kV Jigmeling - Dagapela Line	-21.75	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	23.67	Auxiliary Consumption & Transformation Losses at Gen. end	0.04%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	7.72	Unit-I under AMP. Unit-IV on Standby.
		Unit-II	12.49	132kV KHP - Kilikhar Line	16.29	
		Unit- III	12.44	5MVA, 132/11kV TFR	0.90	
		Unit- IV	0.00	132kV Motanga - Rangia Line	0.00	
		Total	24.93	Auxiliary Consumption & Transformation Losses at Generator end	0.08%	

Note: Generation-Load Summary (MW) for February 25, 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	218.57	376.75	375.33	-82.15	1.42
2	Eastern Grid	241.01	54.69	53.91	110.29	0.78
Total		459.58	431.44	429.24	28.14	2.20

Note: Generation-Load Summary for February 25, 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	256.88	222.81	219.48	24.42	3.33
2	Eastern Grid	109.29	69.22	68.64	49.72	0.58
Total		366.17	292.03	288.12	74.14	3.91

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: February 26, 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	-50.49	
		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	198.91	Unit-I & II under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG-ALI I (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	108.73	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	91.10	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)	75.97	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	46.54	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	72.01	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	12.29	
		-	-	80MVA, 220/132kV ICT - II (HV)	12.54	
		-	-	220kV Tsirang - Jigmeling Line	-68.29	
-	-	132kV Gelephu - Salakati Line	-5.53			
Total	199.83	Auxiliary Consumption & Transformation Losses at Generator end	0.46%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	8.51	Unit-III under shutdown.. Unit-I under Annual Maintenance.
		Unit- II	85.76	220kV CHP - Birpara Line- II	8.52	
		Unit- III	0.00	220kV CHP - Malbase Line- III	78.69	
		Unit- IV	87.60	220kV CHP - Semtokha Line- IV	55.72	
		-	-	220kV Malbase - Birpara Line	-46.23	
		-	-	66kV CHP - Chumdo Line	15.49	
		-	-	66kV CHP - Gedu Line	2.89	
		-	-	3x3MVA, 66/11kV TFR	1.45	
Total	173.36	Auxiliary Consumption & Transformation Losses at Generator end	1.21%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	63.40	U/S Unit-I under Annual maintenance. L/S Unit-II on Standby.
		Unit- II	6.80	66kV BHP - Lobeysa Line	22.87	
		Total	6.80	220kV BHP - Tsirang Line	-64.77	
5	40MW BHP (L/S)	Unit- I	15.00	5MVA, 66/11kV TFR	0.55	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	16.77	
		Total	15.00	Auxiliary Consumption & Transformation Losses at Generator end	-1.15%	
6	126MW DHP	Unit-I	26.18	220kV DHP - Tsirang Line	0.00	Unit-II on Standby. 220kV DHP_Tsirang Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	25.97	
		-	-	220kV Jigmeling - Dagapela Line	-16.77	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	26.18	Auxiliary Consumption & Transformation Losses at Generator end	0.04%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	14.58	Unit-I under AMP. Unit-IV on Standby.
		Unit-II	15.02	132kV KHP - Kilikhar Line	14.41	
		Unit- III	14.97	5MVA, 132/11kV TFR	0.66	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-0.99	
		Total	29.99	Auxiliary Consumption & Transformation Losses at Generator end	1.12%	

Note: Generation-Load Summary (MW) for February 26, 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	221.34	369.32	367.47	-79.69	1.85
2	Eastern Grid	229.82	49.50	48.24	112.03	1.26
Total		451.16	418.82	415.71	32.34	3.11

Note: Generation-Load Summary for February 26, 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	256.59	214.49	208.15	31.40	6.34
2	Eastern Grid	106.43	54.22	53.84	62.91	0.38
Total		363.02	268.71	261.99	94.31	6.72

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.

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