

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 25, 2021
Hours: 18:00 Hours

Date	Time	Load(MW)
23-Dec-21	18:00hrs	479.88

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	Unit-I, II & III under Annual Maintenance & Unit-V on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line II on Standby
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	70.95	
		Unit- IV	99.69	400kV THP - Malbase Line - III	164.97	
		Unit- V	0.00	400kV Malbase - Siliguri Line	52.39	
		Unit- VI	138.99	-	-	
		Total	238.68	Auxiliary Consumption & Transformation Losses at Generator end	1.16%	
2	720MW MHP	Unit-I	136.94	400kV MHP - Jigmeling Line - I	134.98	Unit-II and III on Standby. Unit-IV 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.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	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)	105.83	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	10.08	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	16.34	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.13	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.50	
		-	-	220kV Tsirang - Jigmeling Line	-42.73	
-	-	132kV Gelephu - Salakati Line	-7.85			
Total	136.94	Auxiliary Consumption & Transformation Losses at Generator end	1.43%			
3	336MW CHP	Unit- I	66.05	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit IV under Annual Maintenance. 220kV CHP_Birpara Line I on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-5.49	
		Unit- III	61.01	220kV CHP - Malbase Line- III	26.85	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	79.84	
		-	-	220kV Malbase - Birpara Line	-29.36	
		-	-	66kV CHP - Chumdo Line	22.02	
		-	-	66kV CHP - Gedu Line	1.92	
		-	-	3x3MVA, 66/11kV TFR	1.81	
Total	127.06	Auxiliary Consumption & Transformation Losses at Generator end	0.09%			
4	24MW BHP (U/S)	Unit- I	9.30	220kV BHP - Semtokha Line	63.60	U/S unit-II & L/S Unit-I on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	30.80	
		Total	9.30	220kV BHP - Tsirang Line	-68.13	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	1.08	U/S unit-II & L/S Unit-I on standby.
		Unit- II	18.00	30MVA ICT, 220/66kV (HV)	22.81	
		Total	18.00	Auxiliary Consumption & Transformation Losses at Generator end	-0.18%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	30.49	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	31.20	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.23	
		-	-	5MVA, 220/33kV TFR	0.21	
Total	31.20	Auxiliary Consumption & Transformation Losses at Gen. end	1.60%			
7	60MW KHP	Unit- I	10.48	132kV KHP - Nangkhoh Line	4.54	Unit III on standby. Unit-IV under Annual Maintenance.
		Unit-II	10.48	132kV KHP - Kilikhar Line	15.49	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.66	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-6.06	
		Total	20.96	Auxiliary Consumption & Transformation Losses at Generator end	1.29%	

Note: Generation-Load Summary (MW) for December 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	424.24	378.48	375.16	88.49	3.32
2	Eastern Grid	157.90	102.66	100.43	12.51	2.23
Total		582.14	481.14	475.59	101.00	5.55

Note: Generation-Load Summary for December 25, 2020 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	374.84	264.79	259.56	86.58	5.23
2	Eastern Grid	118.72	66.30	64.45	75.89	1.85
Total		493.56	331.09	324.01	162.47	7.08

NOTE- BHP, DHP and MHP 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: December 26, 2021
Hours: 09:00 Hours

Date	Time	Load(MW)
23-Dec-21	18:00hrs	479.88

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	Unit-I, II & III under Annual Maintenance & Unit-V on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line II under Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	65.49	
		Unit- IV	118.54	400kV THP - Malbase Line - III	140.55	
		Unit- V	0.00	400kV Malbase - Siliguri Line	51.48	
		Unit- VI	89.16	-	-	
		Total	207.70	Auxiliary Consumption & Transformation Losses at Generator end	0.80%	
2	720MW MHP	Unit-I	179.99	400kV MHP - Jigmeling Line - I	178.51	Unit- II & III on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	-	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	-	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	-	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)	74.48	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	39.23	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	61.25	
		-	-	80MVA, 220/132kV ICT - I (HV)	19.87	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.14	
		-	-	220kV Tsirang - Jigmeling Line	-21.26	
-	-	132kV Gelephu - Salakati Line	6.44			
Total	179.99	Auxiliary Consumption & Transformation Losses at Generator end	0.82%			
3	336MW CHP	Unit- I	83.73	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line-I on standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	15.70	
		Unit- III	83.71	220kV CHP - Malbase Line- III	56.94	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	71.42	
		-	-	220kV Malbase - Birpara Line	-18.34	
		-	-	66kV CHP - Chumdo Line	17.79	
		-	-	66kV CHP - Gedu Line	2.62	
		-	-	3x3MVA, 66/11kV TFR	1.48	
Total	167.44	Auxiliary Consumption & Transformation Losses at Generator end	0.89%			
4	24MW BHP (U/S)	Unit- I	9.20	220kV BHP - Semtokha Line	48.50	U/S Unit II & L/S Unit-I on standby.
		Unit- II	0.00	66kV BHP - Lobeysa Line	26.47	
		Total	9.20	220kV BHP - Tsirang Line	-48.54	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.66	U/S Unit II & L/S Unit-I on standby.
		Unit- II	18.00	30MVA ICT, 220/66kV (HV)	18.14	
		Total	18.00	Auxiliary Consumption & Transformation Losses at Generator end	0.40%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	31.00	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	31.99	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.33	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	31.99	Auxiliary Consumption & Transformation Losses at Generator end	2.47%			
7	60MW KHP	Unit- I	15.06	132kV KHP - Nangkhoh Line	25.44	Unit-IV under Annual Maintenance.
		Unit-II	15.07	132kV KHP - Kilikhar Line	18.54	
		Unit- III	15.11	5MVA, 132/11kV TFR	0.70	
		Unit- IV	0.00	132kV Motanga - Rangia Line	8.06	
		Total	45.24	Auxiliary Consumption & Transformation Losses at Generator end	1.24%	

Note: Generation-Load Summary (MW) for December 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	434.33	341.26	337.21	114.33	4.05
2	Eastern Grid	225.23	88.99	86.95	114.98	2.04
Total		659.56	430.25	424.16	229.31	6.09

Note: Generation-Load Summary for December 26, 2020 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	364.61	233.35	231.01	116.84	2.34
2	Eastern Grid	117.44	50.01	49.11	81.85	0.90
Total		482.05	283.36	280.12	198.69	3.24

NOTE-BHP & MAT 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.