

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 23, 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	88.36	
		Unit- IV	138.32	400kV THP - Malbase Line - III	186.52	
		Unit- V	0.00	400kV Malbase - Siliguri Line	68.13	
		Unit- VI	138.68	-	-	
		Total	277.00	Auxiliary Consumption & Transformation Losses at Generator end	0.77%	
2	720MW MHP	Unit-I	93.83	400kV MHP - Jigmeling Line - I	149.28	Unit-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	57.06	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)	102.16	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	21.39	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	14.57	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.96	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.29	
		-	-	220kV Tsirang - Jigmeling Line	-43.44	
-	-	132kV Gelephu - Salakati Line	-5.84			
Total	150.89	Auxiliary Consumption & Transformation Losses at Generator end	1.07%			
3	336MW CHP	Unit- I	68.09	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	0.00	
		Unit- III	68.32	220kV CHP - Malbase Line- III	28.75	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	80.23	
		-	-	220kV Malbase - Birpara Line	-21.75	
		-	-	66kV CHP - Chumdo Line	22.36	
		-	-	66kV CHP - Gedu Line	2.48	
		-	-	3x3MVA, 66/11kV TFR	1.80	
Total	136.41	Auxiliary Consumption & Transformation Losses at Generator end	0.58%			
4	24MW BHP (U/S)	Unit- I	9.50	220kV BHP - Semtokha Line	64.60	U/S unit-II & L/S Unit-I on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	31.29	
		Total	9.50	220kV BHP - Tsirang Line	-68.94	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.92	U/S unit-II & L/S Unit-I on standby.
		Unit- II	18.30	30MVA ICT, 220/66kV (HV)	23.00	
		Total	18.30	Auxiliary Consumption & Transformation Losses at Generator end	-0.25%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	31.26	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	31.47	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.98	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	31.47	Auxiliary Consumption & Transformation Losses at Gen. end	0.03%			
7	60MW KHP	Unit- I	13.05	132kV KHP - Nangkhoh Line	7.70	Unit II on standby. Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	17.44	
		Unit- III	13.11	5MVA, 132/11kV TFR	0.49	
		Unit- IV	0.00	132kV Motanga - Rangia Line	0.00	
		Total	26.16	Auxiliary Consumption & Transformation Losses at Generator end	2.04%	

Note: Generation-Load Summary (MW) for December 23, 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	472.68	381.38	378.53	134.74	2.85
2	Eastern Grid	177.05	103.49	101.35	30.12	2.14
Total		649.73	484.87	479.88	164.86	4.99

Note: Generation-Load Summary for December 23, 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	394.73	257.86	255.81	118.70	2.05
2	Eastern Grid	153.24	60.66	59.55	110.75	1.11
Total		547.97	318.52	315.36	229.45	3.16

NOTE- BHP, MHP and KHP 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 24, 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	62.53	
		Unit- IV	79.87	400kV THP - Malbase Line - III	153.59	
		Unit- V	0.00	400kV Malbase - Siliguri Line	44.30	
		Unit- VI	138.88	-	-	
		Total	218.75	Auxiliary Consumption & Transformation Losses at Generator end	1.20%	
2	720MW MHP	Unit-I	136.95	400kV MHP - Jigmeling Line - I	135.85	Unit- II & 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)	86.36	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	18.79	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	29.52	
		-	-	80MVA, 220/132kV ICT - I (HV)	19.31	
		-	-	80MVA, 220/132kV ICT - II (HV)	19.59	
		-	-	220kV Tsirang - Jigmeling Line	-31.87	
-	-	132kV Gelephu - Salakati Line	1.43			
Total	136.95	Auxiliary Consumption & Transformation Losses at Generator end	0.80%			
3	336MW CHP	Unit- I	63.34	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	-2.43	
		Unit- III	63.31	220kV CHP - Malbase Line- III	31.92	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	74.57	
		-	-	220kV Malbase - Birpara Line	-28.39	
		-	-	66kV CHP - Chumdo Line	19.32	
		-	-	66kV CHP - Gedu Line	2.08	
		-	-	3x3MVA, 66/11kV TFR	1.47	
Total	126.65	Auxiliary Consumption & Transformation Losses at Generator end	-0.22%			
4	24MW BHP (U/S)	Unit- I	9.00	220kV BHP - Semtokha Line	57.70	U/S Unit II & L/S Unit-I on standby.
		Unit- II	0.00	66kV BHP - Lobeysa Line	28.62	
		Total	9.00	220kV BHP - Tsirang Line	-60.57	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.65	U/S Unit II & L/S Unit-I on standby.
		Unit- II	17.50	30MVA ICT, 220/66kV (HV)	20.27	
		Total	17.50	Auxiliary Consumption & Transformation Losses at Generator end	0.38%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	32.31	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	32.50	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.25	
		-	-	5MVA, 220/33kV TFR	0.15	
Total	32.50	Auxiliary Consumption & Transformation Losses at Generator end	0.12%			
7	60MW KHP	Unit- I	15.02	132kV KHP - Nangkhoh Line	13.64	Unit-II on Standby. Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	15.40	
		Unit- III	15.01	5MVA, 132/11kV TFR	0.61	
		Unit- IV	0.00	132kV Motanga - Rangia Line	1.69	
		Total	30.03	Auxiliary Consumption & Transformation Losses at Generator end	1.27%	

Note: Generation-Load Summary (MW) for December 24, 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	404.40	360.26	357.77	76.01	2.49
2	Eastern Grid	166.98	83.68	82.20	51.43	1.48
Total		571.38	443.94	439.97	127.44	3.97

Note: Generation-Load Summary for December 24, 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	368.89	225.25	222.33	121.64	2.92
2	Eastern Grid	154.85	58.72	56.12	118.13	2.60
Total		523.74	283.97	278.45	239.77	5.52

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.