

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 24, 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	71.22	
		Unit- IV	99.40	400kV THP - Malbase Line - III	164.42	
		Unit- V	0.00	400kV Malbase - Siliguri Line	51.15	
		Unit- VI	139.09	-	-	
		Total	238.49	Auxiliary Consumption & Transformation Losses at Generator end	1.20%	
2	720MW MHP	Unit-I	128.26	400kV MHP - Jigmeling Line - I	126.86	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)	107.96	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	6.96	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	11.51	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.54	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.91	
		-	-	220kV Tsirang - Jigmeling Line	-43.42	
-	-	132kV Gelephu - Salakati Line	-9.60			
Total	128.26	Auxiliary Consumption & Transformation Losses at Generator end	1.09%			
3	336MW CHP	Unit- I	63.33	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	-5.80	
		Unit- III	63.13	220kV CHP - Malbase Line- III	26.24	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	79.75	
		-	-	220kV Malbase - Birpara Line	-29.28	
		-	-	66kV CHP - Chumdo Line	22.83	
		-	-	66kV CHP - Gedu Line	1.12	
		-	-	3x3MVA, 66/11kV TFR	1.82	
Total	126.46	Auxiliary Consumption & Transformation Losses at Generator end	0.40%			
4	24MW BHP (U/S)	Unit- I	9.30	220kV BHP - Semtokha Line	64.59	U/S unit-II & L/S Unit-I on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	30.78	
		Total	9.30	220kV BHP - Tsirang Line	-68.95	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.97	U/S unit-II & L/S Unit-I on standby.
		Unit- II	18.10	30MVA ICT, 220/66kV (HV)	22.66	
		Total	18.10	Auxiliary Consumption & Transformation Losses at Generator end	0.04%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	31.17	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	31.38	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.24	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	31.38	Auxiliary Consumption & Transformation Losses at Gen. end	0.03%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	9.97	Unit I on standby. Unit-IV under Annual Maintenance.
		Unit-II	15.06	132kV KHP - Kilikhar Line	19.17	
		Unit- III	15.09	5MVA, 132/11kV TFR	0.49	
		Unit- IV	0.00	132kV Motanga - Rangia Line	1.85	
		Total	30.15	Auxiliary Consumption & Transformation Losses at Generator end	1.74%	

Note: Generation-Load Summary (MW) for December 24, 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	423.73	379.86	376.49	87.29	3.37
2	Eastern Grid	158.41	104.27	102.35	10.72	1.92
Total		582.14	484.13	478.84	98.01	5.29

Note: Generation-Load Summary for December 24, 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	375.42	258.40	258.15	102.02	0.25
2	Eastern Grid	213.54	65.62	63.82	162.92	1.80
Total		588.96	324.02	321.97	264.94	2.05

NOTE- BHP, DHP, MAT and GEL 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 25, 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	70.92	
		Unit- IV	99.53	400kV THP - Malbase Line - III	164.96	
		Unit- V	0.00	400kV Malbase - Siliguri Line	51.83	
		Unit- VI	139.02	-	-	
		Total	238.55	Auxiliary Consumption & Transformation Losses at Generator end	1.12%	
2	720MW MHP	Unit-I	131.63	400kV MHP - Jigmeling Line - I	130.14	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)	86.05	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	16.38	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	25.71	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.70	
		-	-	80MVA, 220/132kV ICT - II (HV)	22.02	
		-	-	220kV Tsirang - Jigmeling Line	-26.17	
-	-	132kV Gelephu - Salakati Line	3.07			
Total	131.63	Auxiliary Consumption & Transformation Losses at Generator end	1.13%			
3	336MW CHP	Unit- I	65.96	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	-0.66	
		Unit- III	60.82	220kV CHP - Malbase Line- III	31.06	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	74.45	
		-	-	220kV Malbase - Birpara Line	-24.74	
		-	-	66kV CHP - Chumdo Line	18.90	
		-	-	66kV CHP - Gedu Line	1.75	
		-	-	3x3MVA, 66/11kV TFR	1.44	
Total	126.78	Auxiliary Consumption & Transformation Losses at Generator end	-0.13%			
4	24MW BHP (U/S)	Unit- I	9.10	220kV BHP - Semtokha Line	51.61	U/S Unit II & L/S Unit-I on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	28.00	
		Total	9.10	220kV BHP - Tsirang Line	-53.14	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.62	
		Unit- II	18.00	30MVA ICT, 220/66kV (HV)	19.82	
		Total	18.00	Auxiliary Consumption & Transformation Losses at Generator end	0.04%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	30.60	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	30.80	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.34	
		-	-	5MVA, 220/33kV TFR	0.15	
Total	30.80	Auxiliary Consumption & Transformation Losses at Generator end	0.16%			
7	60MW KHP	Unit- I	12.09	132kV KHP - Nangkhoh Line	9.51	Unit-III on Standby. Unit-IV under Annual Maintenance.
		Unit-II	12.07	132kV KHP - Kilikhar Line	13.68	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.68	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-3.60	
		Total	24.16	Auxiliary Consumption & Transformation Losses at Generator end	1.22%	

Note: Generation-Load Summary (MW) for December 25, 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	423.23	352.05	349.48	97.35	2.57
2	Eastern Grid	155.79	88.06	86.28	41.56	1.79
Total		579.02	440.11	435.76	138.91	4.36

Note: Generation-Load Summary for December 25, 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	375.17	238.76	231.48	122.41	7.28
2	Eastern Grid	213.40	52.63	50.81	174.77	1.82
Total		588.57	291.39	282.29	297.18	9.10

NOTE-BHP, DHP & MAT 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:

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