

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 27, 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	69.59	
		Unit- IV	89.83	400kV THP - Malbase Line - III	176.09	
		Unit- V	0.00	400kV Malbase - Siliguri Line	47.91	
		Unit- VI	159.50	-	-	
		Total	249.33	Auxiliary Consumption & Transformation Losses at Generator end	1.46%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	134.27	Unit-I & II 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	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.48	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)	104.33	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	11.48	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	17.18	
		-	-	80MVA, 220/132kV ICT - I (HV)	24.78	
		-	-	80MVA, 220/132kV ICT - II (HV)	25.04	
		-	-	220kV Tsirang - Jigmeling Line	-38.55	
-	-	132kV Gelephu - Salakati Line	0.44			
Total	135.48	Auxiliary Consumption & Transformation Losses at Generator end	0.89%			
3	336MW CHP	Unit- I	65.68	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	-4.40	
		Unit- III	64.51	220kV CHP - Malbase Line- III	24.30	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	83.46	
		-	-	220kV Malbase - Birpara Line	-25.78	
		-	-	66kV CHP - Chumdo Line	22.50	
		-	-	66kV CHP - Gedu Line	1.96	
		-	-	3x3MVA, 66/11kV TFR	1.85	
		Total	130.19	Auxiliary Consumption & Transformation Losses at Generator end	0.40%	
4	24MW BHP (U/S)	Unit- I	9.30	220kV BHP - Semtokha Line	60.40	U/S unit-II & L/S Unit-I on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	30.60	
		Total	9.30	220kV BHP - Tsirang Line	-63.96	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	1.07	U/S unit-II & L/S Unit-I on standby.
		Unit- II	18.80	30MVA ICT, 220/66kV (HV)	22.63	
		Total	18.80	Auxiliary Consumption & Transformation Losses at Generator end	-0.04%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	30.71	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	30.99	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.79	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	30.99	Auxiliary Consumption & Transformation Losses at Gen. end	0.26%			
7	60MW KHP	Unit- I	13.08	132kV KHP - Nangkhoh Line	5.27	Unit II on standby. Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	16.68	
		Unit- III	9.74	5MVA, 132/11kV TFR	0.62	
		Unit- IV	0.00	132kV Motanga - Rangia Line	8.94	
		Total	22.82	Auxiliary Consumption & Transformation Losses at Generator end	1.08%	

Note: Generation-Load Summary (MW) for December 27, 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	438.61	389.84	385.60	87.32	4.24
2	Eastern Grid	158.30	81.71	80.25	38.04	1.46
Total		596.91	471.55	465.85	125.36	5.70

Note: Generation-Load Summary for December 27, 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	366.85	251.69	247.93	95.00	3.76
2	Eastern Grid	130.50	57.65	56.96	93.01	0.69
Total		497.35	309.34	304.89	188.01	4.45

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 28, 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	75.32	
		Unit- IV	89.36	400kV THP - Malbase Line - III	171.06	
		Unit- V	0.00	400kV Malbase - Siliguri Line	55.19	
		Unit- VI	158.55	-	-	
		Total	247.91	Auxiliary Consumption & Transformation Losses at Generator end	0.62%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	134.79	Unit- I & II 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	135.78	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)	88.43	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	26.90	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	16.97	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.76	
		-	-	80MVA, 220/132kV ICT - II (HV)	24.10	
		-	-	220kV Tsirang - Jigmeling Line	-25.93	
-	-	132kV Gelephu - Salakati Line	3.66			
Total	135.78	Auxiliary Consumption & Transformation Losses at Generator end	0.73%			
3	336MW CHP	Unit- I	61.80	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	-3.16	
		Unit- III	64.11	220kV CHP - Malbase Line- III	27.63	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	78.68	
		-	-	220kV Malbase - Birpara Line	-26.17	
		-	-	66kV CHP - Chumdo Line	19.31	
		-	-	66kV CHP - Gedu Line	2.02	
		-	-	3x3MVA, 66/11kV TFR	1.52	
Total	125.91	Auxiliary Consumption & Transformation Losses at Generator end	-0.07%			
4	24MW BHP (U/S)	Unit- I	9.10	220kV BHP - Semtokha Line	52.20	U/S Unit II & L/S Unit-I on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	28.13	
		Total	9.10	220kV BHP - Tsirang Line	-53.74	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.61	
		Unit- II	18.10	30MVA ICT, 220/66kV (HV)	19.85	
		Total	18.10	Auxiliary Consumption & Transformation Losses at Generator end	0.00%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	30.79	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	31.70	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.75	
		-	-	5MVA, 220/33kV TFR	0.90	
Total	31.70	Auxiliary Consumption & Transformation Losses at Generator end	0.03%			
7	60MW KHP	Unit- I	11.06	132kV KHP - Nangkhor Line	7.38	Unit III on standby Unit-IV under Annual Maintenance.
		Unit-II	11.09	132kV KHP - Kilikhar Line	13.79	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.74	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-3.43	
		Total	22.15	Auxiliary Consumption & Transformation Losses at Generator end	1.08%	

Note: Generation-Load Summary (MW) for December 28, 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	432.72	357.47	356.02	101.18	1.45
2	Eastern Grid	157.93	87.90	86.67	44.10	1.23
Total		590.65	445.37	442.69	145.28	2.68

Note: Generation-Load Summary for December 28, 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	364.45	228.73	223.36	120.21	5.37
2	Eastern Grid	157.07	51.78	49.13	120.81	2.65
Total		521.52	280.51	272.49	241.02	8.02

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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