

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 19, 2021
Hours: 18:00 Hours

Date	Time	Load(MW)
12-Dec-21	18:00hrs	472.23

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	81.85	
		Unit- IV	119.10	400kV THP - Malbase Line - III	173.38	
		Unit- V	0.00	400kV Malbase - Siliguri Line	63.13	
		Unit- VI	139.76	-	-	
		Total	258.86	Auxiliary Consumption & Transformation Losses at Generator end	1.40%	
2	720MW MHP	Unit-I	130.73	400kV MHP - Jigmeling Line - I	128.60	Unit-II & III on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & III on standby. 400kV MHP-JLG Line IV under Annual Maintenance. 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	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)	94.86	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	12.04	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	19.82	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.53	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.84	
		-	-	220kV Tsirang - Jigmeling Line	-40.13	
-	-	132kV Gelephu - Salakati Line	-6.00			
Total	130.73	Auxiliary Consumption & Transformation Losses at Generator end	1.63%			
3	336MW CHP	Unit- I	64.80	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	-2.59	
		Unit- III	63.92	220kV CHP - Malbase Line- III	28.35	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	76.90	
		-	-	220kV Malbase - Birpara Line	-27.03	
		-	-	66kV CHP - Chumdo Line	21.86	
		-	-	66kV CHP - Gedu Line	2.17	
		-	-	3x3MVA, 66/11kV TFR	2.03	
Total	128.72	Auxiliary Consumption & Transformation Losses at Generator end	0.00%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	64.00	U/S Unit I on Standby.
		Unit- II	9.80	66kV BHP - Lobeyasa Line	30.15	
		Total	9.80	220kV BHP - Tsirang Line	-67.09	
5	40MW BHP (L/S)	Unit- I	9.10	5MVA, 66/11kV TFR	0.95	U/S Unit I on Standby.
		Unit- II	9.00	30MVA ICT, 220/66kV (HV)	21.59	
		Total	18.10	Auxiliary Consumption & Transformation Losses at Generator end	-0.39%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	32.29	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	32.49	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.01	
		-	-	5MVA, 220/33kV TFR	0.10	
Total	32.49	Auxiliary Consumption & Transformation Losses at Gen. end	0.31%			
7	60MW KHP	Unit- I	13.59	132kV KHP - Nangkhoh Line	8.61	Unit II on standby. Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	17.77	
		Unit- III	13.54	5MVA, 132/11kV TFR	0.55	
		Unit- IV	0.00	132kV Motanga - Rangia Line	0.00	
		Total	27.13	Auxiliary Consumption & Transformation Losses at Generator end	0.76%	

Note: Generation-Load Summary (MW) for December 19, 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	447.97	372.74	369.12	115.36	3.62
2	Eastern Grid	157.86	91.87	89.54	25.86	2.33
Total		605.83	464.61	458.66	141.22	5.96

Note: Generation-Load Summary for December 19, 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	399.91	256.67	253.78	124.62	2.89
2	Eastern Grid	154.52	61.23	59.78	111.91	1.45
Total		554.43	317.90	313.56	236.53	4.34

NOTE- BHP,MHP, Rangia and Salakati 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 20, 2021
Hours: 09:00 Hours

Date	Time	Load(MW)
12-Dec-21	18:00hrs	472.23

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	71.64	
		Unit- IV	100.73	400kV THP - Malbase Line - III	164.76	
		Unit- V	0.00	400kV Malbase - Siliguri Line	54.00	
		Unit- VI	138.87	-	-	
		Total	239.60	Auxiliary Consumption & Transformation Losses at Generator end	1.34%	
2	720MW MHP	Unit-I	144.76	400kV MHP - Jigmeling Line - I	143.07	Unit-II & III on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & III on standby. 400kV MHP-JLG Line IV under Annual Maintenance. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. JLG_ALI Line I (Direct) under 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)	90.21	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	31.51	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	20.37	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.24	
		-	-	80MVA, 220/132kV ICT - II (HV)	17.47	
		-	-	220kV Tsirang - Jigmeling Line	-40.52	
-	-	132kV Gelephu - Salakati Line	-1.78			
Total	144.76	Auxiliary Consumption & Transformation Losses at Generator end	1.17%			
3	336MW CHP	Unit- I	69.18	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	67.07	220kV CHP - Malbase Line- III	39.67	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	74.82	
		-	-	220kV Malbase - Birpara Line	-31.00	
		-	-	66kV CHP - Chumdo Line	19.39	
		-	-	66kV CHP - Gedu Line	1.85	
		-	-	3x3MVA, 66/11kV TFR	0.94	
Total	136.25	Auxiliary Consumption & Transformation Losses at Generator end	-0.31%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	54.00	U/S Unit-I on standby./L/S Unit-I under shutdown.
		Unit- II	9.50	66kV BHP - Lobeysa Line	27.80	
		Total	9.50	220kV BHP - Tsirang Line	-70.79	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.57	
		Unit- II	2.00	30MVA ICT, 220/66kV (HV)	4.47	
		Total	2.00	Auxiliary Consumption & Transformation Losses at Generator end	-0.70%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	33.29	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	33.49	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.17	
		-	-	5MVA, 220/33kV TFR		
Total	33.49	Auxiliary Consumption & Transformation Losses at Generator end	0.60%			
7	60MW KHP	Unit- I	11.60	132kV KHP - Nangkhoh Line	8.56	Unit-II on Standby. Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	13.72	
		Unit- III	11.61	5MVA, 132/11kV TFR	0.60	
		Unit- IV	0.00	132kV Motanga - Rangia Line	0.00	
		Total	23.21	Auxiliary Consumption & Transformation Losses at Generator end	1.42%	

Note: Generation-Load Summary (MW) for December 20, 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	420.84	366.72	363.82	94.64	2.90
2	Eastern Grid	167.97	77.35	75.33	50.10	2.02
Total		588.81	444.07	439.15	144.74	4.92

Note: Generation-Load Summary for December 20, 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	399.09	231.50	226.98	150.34	4.52
2	Eastern Grid	153.91	54.09	52.28	117.07	1.81
Total		553.00	285.59	279.26	267.41	6.33

NOTE- MAL,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.
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