

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 29, 2021
Hours: 18:00 Hours

Date	Time	Load(MW)
29-Dec-21	18:00hrs	482.44

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	124.19	
		Unit- IV	169.10	400kV THP - Malbase Line - III	212.06	
		Unit- V	0.00	400kV Malbase - Siliguri Line	102.05	
		Unit- VI	168.51	-	-	
		Total	337.61	Auxiliary Consumption & Transformation Losses at Generator end	0.40%	
2	720MW MHP	Unit-I	133.43	400kV MHP - Jigmeling Line - I	132.23	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)	91.31	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	15.39	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	23.45	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.44	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.74	
		-	-	220kV Tsirang - Jigmeling Line	-27.53	
-	-	132kV Gelephu - Salakati Line	-7.05			
Total	133.43	Auxiliary Consumption & Transformation Losses at Generator end	0.90%			
3	336MW CHP	Unit- I	84.83	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit IV under Annual Maintenance. 220kV CHP_Birpara Line I & II under breakdown.
		Unit- II	0.00	220kV CHP - Birpara Line- II	0.00	
		Unit- III	72.19	220kV CHP - Malbase Line- III	49.22	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	81.33	
		-	-	220kV Malbase - Birpara Line	-15.80	
		-	-	66kV CHP - Chumdo Line	21.72	
		-	-	66kV CHP - Gedu Line	2.55	
		-	-	3x3MVA, 66/11kV TFR	2.02	
Total	157.02	Auxiliary Consumption & Transformation Losses at Generator end	0.11%			
4	24MW BHP (U/S)	Unit- I	5.20	220kV BHP - Semtokha Line	60.50	
		Unit- II	5.00	66kV BHP - Lobeyssa Line	31.46	
		Total	10.20	220kV BHP - Tsirang Line	-60.14	
5	40MW BHP (L/S)	Unit- I	11.20	5MVA, 66/11kV TFR	1.05	
		Unit- II	11.50	30MVA ICT, 220/66kV (HV)	22.73	
		Total	22.70	Auxiliary Consumption & Transformation Losses at Generator end	0.09%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	36.96	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	37.97	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.78	
		-	-	5MVA, 220/33kV TFR	1.00	
Total	37.97	Auxiliary Consumption & Transformation Losses at Gen. end	0.03%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	6.15	Unit I on standby. Unit-IV under Annual Maintenance.
		Unit-II	11.79	132kV KHP - Kilikhar Line	16.39	
		Unit- III	11.80	5MVA, 132/11kV TFR	0.83	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-5.15	
		Total	23.59	Auxiliary Consumption & Transformation Losses at Generator end	0.95%	

Note: Generation-Load Summary (MW) for December 29, 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	565.50	382.59	381.01	210.44	1.58
2	Eastern Grid	157.02	102.85	101.43	26.64	1.42
Total		722.52	485.44	482.44	237.08	3.00

Note: Generation-Load Summary for December 29, 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	363.42	258.19	257.58	83.58	0.61
2	Eastern Grid	138.87	70.84	69.93	89.68	0.91
Total		502.29	329.03	327.51	173.26	1.52

NOTE- BHP& 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 30, 2021
Hours: 09:00 Hours

Date	Time	Load(MW)
29-Dec-21	18:00hrs	482.44

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	105.57	
		Unit- IV	129.34	400kV THP - Malbase Line - III	190.45	
		Unit- V	0.00	400kV Malbase - Siliguri Line	86.18	
		Unit- VI	168.95	-	-	
		Total	298.29	Auxiliary Consumption & Transformation Losses at Generator end	0.76%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	139.33	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	140.52	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)	82.64	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	21.60	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	33.44	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.21	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.38	
		-	-	220kV Tsirang - Jigmeling Line	-23.69	
-	-	132kV Gelephu - Salakati Line	-2.20			
Total	140.52	Auxiliary Consumption & Transformation Losses at Generator end	0.85%			
3	336MW CHP	Unit- I	76.76	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line-I & II under breakdown..
		Unit- II	0.00	220kV CHP - Birpara Line- II	0.00	
		Unit- III	77.18	220kV CHP - Malbase Line- III	51.75	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	79.62	
		-	-	220kV Malbase - Birpara Line	-20.05	
		-	-	66kV CHP - Chumdo Line	18.51	
		-	-	66kV CHP - Gedu Line	2.67	
		-	-	3x3MVA, 66/11kV TFR	1.77	
Total	153.94	Auxiliary Consumption & Transformation Losses at Generator end	-0.25%			
4	24MW BHP (U/S)	Unit- I	5.00	220kV BHP - Semtokha Line	53.30	
		Unit- II	4.70	66kV BHP - Lobeyasa Line	29.20	
		Total	9.70	220kV BHP - Tsirang Line	-54.99	
5	40MW BHP (L/S)	Unit- I	8.90	5MVA, 66/11kV TFR	0.73	
		Unit- II	9.90	30MVA ICT, 220/66kV (HV)	20.23	
		Total	18.80	Auxiliary Consumption & Transformation Losses at Generator end	0.91%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	34.61	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	35.50	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.11	
		-	-	5MVA, 220/33kV TFR	0.80	
Total	35.50	Auxiliary Consumption & Transformation Losses at Generator end	0.25%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	8.59	Unit I on standby Unit-IV under Annual Maintenance.
		Unit-II	12.09	132kV KHP - Kilikhar Line	14.42	
		Unit- III	12.09	5MVA, 132/11kV TFR	0.70	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-5.87	
		Total	24.18	Auxiliary Consumption & Transformation Losses at Generator end	1.94%	

Note: Generation-Load Summary (MW) for December 30, 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	516.23	368.22	365.98	171.70	2.24
2	Eastern Grid	164.70	94.04	92.38	46.97	1.66
Total		680.93	462.26	458.36	218.67	3.90

Note: Generation-Load Summary for December 30, 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	338.02	216.36	211.52	107.63	4.84
2	Eastern Grid	115.73	58.98	56.83	70.78	2.15
Total		453.75	275.34	268.35	178.41	6.99

NOTE-BHP & MHP 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:
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