

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 26, 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	63.66	
		Unit- IV	70.50	400kV THP - Malbase Line - III	143.19	
		Unit- V	0.00	400kV Malbase - Siliguri Line	48.29	
		Unit- VI	139.29	-	-	
		Total	209.79	Auxiliary Consumption & Transformation Losses at Generator end	1.40%	
2	720MW MHP	Unit-I	100.30	400kV MHP - Jigmeling Line - I	249.37	Unit-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	150.53	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)	107.63	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	54.77	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	83.46	
		-	-	80MVA, 220/132kV ICT - I (HV)	24.72	
		-	-	80MVA, 220/132kV ICT - II (HV)	25.02	
		-	-	220kV Tsirang - Jigmeling Line	-41.76	
-	-	132kV Gelephu - Salakati Line	0.89			
Total	250.83	Auxiliary Consumption & Transformation Losses at Generator end	0.58%			
3	336MW CHP	Unit- I	83.85	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	9.36	
		Unit- III	83.54	220kV CHP - Malbase Line- III	49.54	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	81.14	
		-	-	220kV Malbase - Birpara Line	-23.61	
		-	-	66kV CHP - Chumdo Line	22.36	
		-	-	66kV CHP - Gedu Line	2.14	
		-	-	3x3MVA, 66/11kV TFR	1.82	
Total	167.39	Auxiliary Consumption & Transformation Losses at Generator end	0.62%			
4	24MW BHP (U/S)	Unit- I	9.20	220kV BHP - Semtokha Line	62.50	U/S unit-II & L/S Unit-I on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	27.16	
		Total	9.20	220kV BHP - Tsirang Line	-66.92	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.99	U/S unit-II & L/S Unit-I on standby.
		Unit- II	18.20	30MVA ICT, 220/66kV (HV)	22.83	
		Total	18.20	Auxiliary Consumption & Transformation Losses at Generator end	13.39%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	30.87	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	31.07	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.19	
		-	-	5MVA, 220/33kV TFR	0.15	
Total	31.07	Auxiliary Consumption & Transformation Losses at Gen. end	0.16%			
7	60MW KHP	Unit- I	15.05	132kV KHP - Nangkhoh Line	21.23	Unit III on standby. Unit-IV under Annual Maintenance.
		Unit-II	15.04	132kV KHP - Kilikhar Line	22.58	
		Unit- III	14.99	5MVA, 132/11kV TFR	0.66	
		Unit- IV	0.00	132kV Motanga - Rangia Line	6.30	
		Total	45.08	Auxiliary Consumption & Transformation Losses at Generator end	1.36%	

Note: Generation-Load Summary (MW) for December 26, 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	435.65	379.71	372.02	97.70	7.69
2	Eastern Grid	295.91	108.73	106.66	145.42	2.07
Total		731.56	488.44	478.68	243.12	9.76

Note: Generation-Load Summary for December 26, 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	372.32	264.81	257.86	86.75	6.95
2	Eastern Grid	118.72	60.18	59.56	77.76	0.62
Total		491.04	324.99	317.42	164.51	7.57

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 27, 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	99.62	
		Unit- IV	138.94	400kV THP - Malbase Line - III	194.96	
		Unit- V	0.00	400kV Malbase - Siliguri Line	78.82	
		Unit- VI	158.66	-	-	
		Total	297.60	Auxiliary Consumption & Transformation Losses at Generator end	1.01%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	109.28	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	110.25	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)	85.20	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	8.63	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	14.22	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.20	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.50	
		-	-	220kV Tsirang - Jigmeling Line	-23.33	
-	-	132kV Gelephu - Salakati Line	1.17			
Total	110.25	Auxiliary Consumption & Transformation Losses at Generator end	0.88%			
3	336MW CHP	Unit- I	64.79	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	0.39	
		Unit- III	64.05	220kV CHP - Malbase Line- III	22.76	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	82.97	
		-	-	220kV Malbase - Birpara Line	-17.42	
		-	-	66kV CHP - Chumdo Line	20.14	
		-	-	66kV CHP - Gedu Line	1.24	
		-	-	3x3MVA, 66/11kV TFR	1.24	
Total	128.84	Auxiliary Consumption & Transformation Losses at Generator end	0.08%			
4	24MW BHP (U/S)	Unit- I	9.10	220kV BHP - Semtokha Line	49.20	U/S Unit II & L/S Unit-I on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	28.24	
		Total	9.10	220kV BHP - Tsirang Line	-50.99	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.60	U/S Unit II & L/S Unit-I on standby.
		Unit- II	18.00	30MVA ICT, 220/66kV (HV)	19.96	
		Total	18.00	Auxiliary Consumption & Transformation Losses at Generator end	0.18%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	31.50	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	31.68	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.40	
		-	-	5MVA, 220/33kV TFR	0.19	
Total	31.68	Auxiliary Consumption & Transformation Losses at Generator end	-0.03%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	2.34	Unit I & II on standby Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	11.73	
		Unit- III	15.07	5MVA, 132/11kV TFR	0.77	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-8.13	
		Total	15.07	Auxiliary Consumption & Transformation Losses at Generator end	1.52%	

Note: Generation-Load Summary (MW) for December 27, 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	485.22	347.14	343.98	161.41	3.16
2	Eastern Grid	125.32	86.10	84.90	15.89	1.20
Total		610.54	433.24	428.88	177.30	4.36

Note: Generation-Load Summary for December 27, 2020 at 09:00hrs.

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1	Western Grid	390.04	229.87	226.57	139.09	3.30
2	Eastern Grid	139.89	53.05	51.93	107.87	1.12
Total		529.93	282.92	278.50	246.96	4.42

NOTE-BHP,DHP & MAT data collected from site.

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 - 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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