

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 3, 2021
Hours: 18:00 Hours

Date **Time** **Load(MW)**
 26-Nov-21 19:00hrs 459.39 MW

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 & III under Annual Maintenance. Unit-IV under Standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-MAL line under emergency shutdown. 400kV MAL_Siliguri Line under shutdown
		Unit- II	98.01	400kV THP - Siliguri Line - II	122.91	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	0.00	400kV THP - Malbase Line - III	210.06	
		Unit- V	118.08	400kV Malbase - Siliguri Line	94.21	
		Unit- VI	119.27	-	-	
		Total	335.36	Auxiliary Consumption & Transformation Losses at Generator end	0.71%	
2	720MW MHP	Unit-I	175.13	400kV MHP - Jigmeling Line - I	174.20	Unit-II & III 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. JLG_ALI Line I (Direct) opened (Both end).
		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)	73.76	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	41.22	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	61.42	
		-	-	80MVA, 220/132kV ICT - I (HV)	22.85	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.16	
		-	-	220kV Tsirang - Jigmeling Line	-13.62	
-	-	132kV Gelephu - Salakati Line	-2.21			
Total	175.13	Auxiliary Consumption & Transformation Losses at Generator end	0.53%			
3	336MW CHP	Unit- I	58.75	220kV CHP - Birpara Line- I	0.00	Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line on standby.
		Unit- II	50.86	220kV CHP - Birpara Line- II	22.94	
		Unit- III	68.87	220kV CHP - Malbase Line- III	52.65	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	74.57	
		-	-	220kV Malbase - Birpara Line	-4.40	
		-	-	66kV CHP - Chumdo Line	19.46	
		-	-	66kV CHP - Gedu Line	3.34	
		-	-	3x3MVA, 66/11kV TFR	1.55	
Total	178.48	Auxiliary Consumption & Transformation Losses at Generator end	2.22%			
4	24MW BHP (U/S)	Unit- I	6.20	220kV BHP - Semtokha Line	55.00	
		Unit- II	5.90	66kV BHP - Lobeyasa Line	29.14	
		Total	12.10	220kV BHP - Tsirang Line	-49.93	
5	40MW BHP (L/S)	Unit- I	11.50	5MVA, 66/11kV TFR	0.98	
		Unit- II	11.50	30MVA ICT, 220/66kV (HV)	18.34	
		Total	23.00	Auxiliary Consumption & Transformation Losses at Generator end	-0.26%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	41.29	Unit-I on standby. 220kV DHP-Dagapela Line on standby.
		Unit-II	41.50	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.17	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	41.50	Auxiliary Consumption & Transformation Losses at Gen. end	0.02%			
7	60MW KHP	Unit- I	10.47	132kV KHP - Nangkhor Line	12.83	Unit-IV under Annual Maintenance.
		Unit-II	10.50	132kV KHP - Kilikhar Line	18.46	
		Unit- III	11.05	5MVA, 132/11kV TFR	0.39	
		Unit- IV	0.00	132kV Motanga - Rangia Line	5.73	
		Total	32.02	Auxiliary Consumption & Transformation Losses at Generator end	1.05%	

Note: Generation-Load Summary (MW) for December 03, 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	590.44	368.40	362.12	235.66	6.28
2	Eastern Grid	207.15	87.37	86.10	106.16	1.27
Total		797.59	455.77	448.22	341.82	7.55

Note: Generation-Load Summary for December 03, 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	453.81	229.91	220.45	223.90	9.46
2	Eastern Grid	172.83	66.00	61.98	146.50	4.02
Total		626.64	295.91	282.43	370.40	13.48

NOTE- MHPA, BHP, and 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:

- 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 4, 2021
Hours:	09:00 Hours

Date	Time	Load(MW)
26-Nov-21	19:00hrs	459.39 MW

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 & III under Annual Maintenance. Unit-IV on standby. Unit V under shutdown. 400kV THP-Siliguri line I under breakdown. 400kV THP_SIL Line IV under maintenance.
		Unit- II	162.56	400kV THP - Siliguri Line - II	115.70	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	0.00	400kV THP - Malbase Line - III	192.13	
		Unit- V	0.00	400kV Malbase - Siliguri Line	93.01	
		Unit- VI	149.10	-	-	
		Total	311.66	Auxiliary Consumption & Transformation Losses at Generator end	1.23%	
2	720MW MHP	Unit-I	175.29	400kV MHP - Jigmeling Line - I	173.37	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. JLG_ALI Line I (Direct) opened (Both end).
		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)	50.95	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	47.42	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	72.76	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.78	
		-	-	80MVA, 220/132kV ICT - II (HV)	18.09	
		-	-	220kV Tsirang - Jigmeling Line	0.69	
-	-	132kV Gelephu - Salakati Line	4.01			
Total	175.29	Auxiliary Consumption & Transformation Losses at Generator end	1.10%			
3	336MW CHP	Unit- I	58.75	220kV CHP - Birpara Line- I	0.00	Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line on standby.
		Unit- II	50.86	220kV CHP - Birpara Line- II	22.41	
		Unit- III	68.87	220kV CHP - Malbase Line- III	60.49	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	70.60	
		-	-	220kV Malbase - Birpara Line	-10.49	
		-	-	66kV CHP - Chumdo Line	16.59	
		-	-	66kV CHP - Gedu Line	2.80	
		-	-	3x3MVA, 66/11kV TFR	1.22	
Total	178.48	Auxiliary Consumption & Transformation Losses at Generator end	2.45%			
4	24MW BHP (U/S)	Unit- I	6.20	220kV BHP - Semtokha Line	45.71	
		Unit- II	5.80	66kV BHP - Lobeyasa Line	26.56	
		Total	12.00	220kV BHP - Tsirang Line	-37.65	
5	40MW BHP (L/S)	Unit- I	11.40	5MVA, 66/11kV TFR	0.52	
		Unit- II	11.50	30MVA ICT, 220/66kV (HV)	15.25	
		Total	22.90	Auxiliary Consumption & Transformation Losses at Generator end	-0.69%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	41.11	Unit-I on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	41.32	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	14.91	
		-	-	5MVA, 220/33kV TFR	0.10	
Total	41.32	Auxiliary Consumption & Transformation Losses at Generator end	0.27%			
7	60MW KHP	Unit- I	11.06	132kV KHP - Nangkhoh Line	16.91	Unit-IV under Annual Maintenance.
		Unit-II	11.10	132kV KHP - Kilikhar Line	15.73	
		Unit- III	11.09	5MVA, 132/11kV TFR	0.29	
		Unit- IV	0.00	132kV Motanga - Rangia Line	8.21	
		Total	33.25	Auxiliary Consumption & Transformation Losses at Generator end	0.96%	

Note: Generation-Load Summary (MW) for December 04, 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	566.36	345.04	336.97	220.63	8.07
2	Eastern Grid	208.54	76.83	74.59	132.40	2.24
Total		774.90	421.87	411.56	353.03	10.31

Note: Generation-Load Summary for December 04, 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	483.89	206.49	199.74	251.10	6.75
2	Eastern Grid	168.68	46.97	46.10	46.10	0.87
Total		652.57	253.46	245.84	297.20	7.62

NOTE-MAT, 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.

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