

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: November 30, 2021
Hours: 19:00 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-II under emergency shutdown. 400kV THP-Siliguri line I under breakdown. 400kV THP-MAL line under Annual Maintenance. 400kV MAL_Siliguri Line opened at 13:56 hrs (27/11/2021) to regulate voltage.
		Unit- II	0.00	400kV THP - Siliguri Line - II	170.75	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	163.61	
		Unit- IV	100.01	400kV THP - Malbase Line - III	0.00	
		Unit- V	97.93	400kV Malbase - Siliguri Line	0.00	
		Unit- VI	138.86	-	-	
		Total	336.80	Auxiliary Consumption & Transformation Losses at Generator end	0.72%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	86.17	Unit-I on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & 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	106.21	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	68.32	400kV MHP - Jigmeling Line - III	86.65	
		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)	83.95	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	33.69	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	57.76	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.46	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.79	
		-	-	220kV Tsirang - Jigmeling Line	-28.58	
-	-	132kV Gelephu - Salakati Line	-5.28			
Total	174.53	Auxiliary Consumption & Transformation Losses at Generator end	0.98%			
3	336MW CHP	Unit- I	60.71	220kV CHP - Birpara Line- I	1.43	CHP Unit IV under Annual Maintenance.
		Unit- II	51.14	220kV CHP - Birpara Line- II	1.54	
		Unit- III	69.08	220kV CHP - Malbase Line- III	89.73	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	62.09	
		-	-	220kV Malbase - Birpara Line	-66.40	
		-	-	66kV CHP - Chumdo Line	19.78	
		-	-	66kV CHP - Gedu Line	4.30	
		-	-	3x3MVA, 66/11kV TFR	1.58	
Total	180.93	Auxiliary Consumption & Transformation Losses at Generator end	0.27%			
4	24MW BHP (U/S)	Unit- I	6.50	220kV BHP - Semtokha Line	72.90	
		Unit- II	6.20	66kV BHP - Lobeyasa Line	30.10	
		Total	12.70	220kV BHP - Tsirang Line	-66.68	
5	40MW BHP (L/S)	Unit- I	12.00	5MVA, 66/11kV TFR	0.24	
		Unit- II	12.30	30MVA ICT, 220/66kV (HV)	18.67	
		Total	24.30	Auxiliary Consumption & Transformation Losses at Generator end	1.19%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	42.90	Unit-I on standby. 220kV DHP-Dagapela Line on standby.
		Unit-II	43.08	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	13.12	
		-	-	5MVA, 220/33kV TFR	0.17	
Total	43.08	Auxiliary Consumption & Transformation Losses at Gen. end	0.02%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	13.24	Unit I on Stadbby. Unit-IV under Annual Maintenance.
		Unit-II	15.55	132kV KHP - Kilikhar Line	17.09	
		Unit- III	15.55	5MVA, 132/11kV TFR	0.41	
		Unit- IV	0.00	132kV Motanga - Rangia Line	2.23	
		Total	31.10	Auxiliary Consumption & Transformation Losses at Generator end	1.17%	

Note: Generation-Load Summary (MW) for November 30, 2021 at 19:00hrs.

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	597.81	355.46	352.09	270.93	3.37
2	Eastern Grid	205.63	88.65	86.58	88.40	2.07
Total		803.44	444.11	438.67	359.33	5.45

Note: Generation-Load Summary for November 30, 2020 at 19:00hrs.

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	499.65	239.05	230.78	234.30	8.27
2	Eastern Grid	180.39	52.32	49.52	154.37	2.80
Total		680.04	291.37	280.30	388.67	11.07

NOTE-BHP, MHPA, and MAT 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.
 - The clocks of all the locations are not synchronized.
- 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 1, 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-II on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-MAL line under Annual Maintenance. 400kV MAL_Siliguri Line open 400kV MAL_Siliguri Line opened at 13:56 hrs (27/11/2021) to regulate voltage.
		Unit- II	0.00	400kV THP - Siliguri Line - II	180.33	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	172.73	
		Unit- IV	118.96	400kV THP - Malbase Line - III	0.00	
		Unit- V	98.39	400kV Malbase - Siliguri Line	0.00	
		Unit- VI	138.34	-	-	
		Total	355.69	Auxiliary Consumption & Transformation Losses at Generator end	0.74%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	89.71	Unit-I on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & 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	106.16	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	75.13	400kV MHP - Jigmeling Line - III	90.16	
		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)	54.86	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	48.13	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	74.35	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.94	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.26	
		-	-	220kV Tsirang - Jigmeling Line	0.82	
-	-	132kV Gelephu - Salakati Line	4.74			
Total	181.29	Auxiliary Consumption & Transformation Losses at Generator end	0.78%			
3	336MW CHP	Unit- I	58.75	220kV CHP - Birpara Line- I	12.86	Unit-IV under Annual Maintenance.
		Unit- II	50.86	220kV CHP - Birpara Line- II	12.77	
		Unit- III	68.87	220kV CHP - Malbase Line- III	104.60	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	29.24	
		-	-	220kV Malbase - Birpara Line	-59.39	
		-	-	66kV CHP - Chumdo Line	13.07	
		-	-	66kV CHP - Gedu Line	4.37	
		-	-	3x3MVA, 66/11kV TFR	1.32	
Total	178.47	Auxiliary Consumption & Transformation Losses at Generator end	0.13%			
4	24MW BHP (U/S)	Unit- I	6.40	220kV BHP - Semtokha Line	46.00	
		Unit- II	6.00	66kV BHP - Lobeyasa Line	30.42	
		Total	12.40	220kV BHP - Tsirang Line	-38.99	
5	40MW BHP (L/S)	Unit- I	12.80	5MVA, 66/11kV TFR	0.47	
		Unit- II	12.80	30MVA ICT, 220/66kV (HV)	18.80	
		Total	25.60	Auxiliary Consumption & Transformation Losses at Generator end	0.26%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	42.78	Unit-I on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	42.99	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	12.87	
		-	-	5MVA, 220/33kV TFR	0.18	
Total	42.99	Auxiliary Consumption & Transformation Losses at Generator end	0.06%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	16.15	Unit I on Standby. Unit-IV under Annual Maintenance.
		Unit-II	15.79	132kV KHP - Kilikhar Line	14.77	
		Unit- III	15.74	5MVA, 132/11kV TFR	0.30	
		Unit- IV	0.00	132kV Motanga - Rangia Line	2.58	
		Total	31.53	Auxiliary Consumption & Transformation Losses at Generator end	0.98%	

Note: Generation-Load Summary (MW) for December 01, 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	615.15	295.03	292.03	319.31	2.99
2	Eastern Grid	212.82	83.83	82.10	129.81	1.73
Total		827.97	378.86	374.13	449.11	4.72

Note: Generation-Load Summary for December 01, 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	480.81	216.14	212.80	146.26	3.34
2	Eastern Grid	188.29	50.91	49.34	155.79	1.57
Total		669.10	267.05	262.14	302.05	4.91

NOTE-BHP, MHP, KHP, TSI 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.