

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	December 1, 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-II under Standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-MAL line under emergency shutdown. 400kV MAL_Siliguri Line opened.
		Unit-II	0.00	400kV THP - Siliguri Line - II	169.36	
		Unit-III	0.00	400kV THP - Siliguri Line- IV	162.68	
		Unit-IV	99.47	400kV THP - Malbase Line - III	0.00	
		Unit-V	97.47	400kV Malbase - Siliguri Line	0.00	
		Unit-VI	138.50	-	-	
		Total	335.44	Auxiliary Consumption & Transformation Losses at Generator end	1.01%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	84.19	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	95.19	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	75.14	400kV MHP - Jigmeling Line - III	84.51	
		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)	90.32	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	29.78	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	46.65	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.61	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.96	
		-	-	220kV Tsirang - Jigmeling Line	-27.61	
-	-	132kV Gelephu - Salakati Line	-2.58			
Total	170.33	Auxiliary Consumption & Transformation Losses at Generator end	0.96%			
3	336MW CHP	Unit-I	58.75	220kV CHP - Birpara Line- I	1.79	CHP Unit IV under Annual Maintenance.
		Unit-II	50.86	220kV CHP - Birpara Line- II	1.80	
		Unit-III	68.87	220kV CHP - Malbase Line- III	92.39	
		Unit-IV	0.00	220kV CHP - Semtokha Line- IV	57.31	
		-	-	220kV Malbase - Birpara Line	-68.48	
		-	-	66kV CHP - Chumdo Line	18.74	
		-	-	66kV CHP - Gedu Line	4.76	
		-	-	3x3MVA, 66/11kV TFR	1.63	
Total	178.48	Auxiliary Consumption & Transformation Losses at Generator end	0.03%			
4	24MW BHP (U/S)	Unit-I	6.40	220kV BHP - Semtokha Line	71.20	
		Unit-II	6.00	66kV BHP - Lobeyasa Line	29.96	
		Total	12.40	220kV BHP - Tsirang Line	-65.87	
5	40MW BHP (L/S)	Unit-I	11.90	5MVA, 66/11kV TFR	0.82	
		Unit-II	11.90	30MVA ICT, 220/66kV (HV)	18.70	
		Total	23.80	Auxiliary Consumption & Transformation Losses at Generator end	0.25%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	42.45	Unit-I on standby. 220kV DHP-Dagapela Line on standby.
		Unit-II	42.64	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	13.97	
		-	-	5MVA, 220/33kV TFR	0.10	
Total	42.64	Auxiliary Consumption & Transformation Losses at Gen. end	0.21%			
7	60MW KHP	Unit-I	10.10	132kV KHP - Nangkhoh Line	11.57	Unit-IV under Annual Maintenance.
		Unit-II	10.09	132kV KHP - Kilikhar Line	18.27	
		Unit-III	10.50	5MVA, 132/11kV TFR	0.25	
		Unit-IV	0.00	132kV Motanga - Rangia Line	-1.49	
		Total	30.69	Auxiliary Consumption & Transformation Losses at Generator end	1.94%	

Note: Generation-Load Summary (MW) for December 01, 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	592.76	353.22	349.58	267.15	3.64
2	Eastern Grid	201.02	101.05	98.82	72.36	2.23
Total		793.78	454.27	448.40	339.51	5.87

Note: Generation-Load Summary for December 01, 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	490.26	272.16	266.33	218.10	5.83
2	Eastern Grid	187.12	65.54	64.22	134.14	1.32
Total		677.38	337.70	330.55	352.24	7.15

NOTE-BHP, KHP, MHPA, 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 2, 2021
Hours: 09:00 Hours

Date: 26-Nov-21 **Time:** 19:00hrs **Load(MW):** 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 not in service. 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	169.11	
		Unit-III	0.00	400kV THP - Siliguri Line- IV	163.87	
		Unit-IV	99.80	400kV THP - Malbase Line - III	0.00	
		Unit-V	97.93	400kV Malbase - Siliguri Line	0.00	
		Unit-VI	138.87	-	-	
		Total	336.60	Auxiliary Consumption & Transformation Losses at Generator end	1.08%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	92.13	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	96.90	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	89.31	400kV MHP - Jigmeling Line - III	92.69	
		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)	70.66	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	43.80	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	67.26	
		-	-	80MVA, 220/132kV ICT - I (HV)	19.19	
		-	-	80MVA, 220/132kV ICT - II (HV)	19.50	
		-	-	220kV Tsirang - Jigmeling Line	-19.16	
-	-	132kV Gelephu - Salakati Line	3.37			
Total	186.21	Auxiliary Consumption & Transformation Losses at Generator end	0.75%			
3	336MW CHP	Unit-I	58.75	220kV CHP - Birpara Line- I	2.04	Unit-IV under Annual Maintenance.
		Unit-II	50.86	220kV CHP - Birpara Line- II	2.05	
		Unit-III	68.87	220kV CHP - Malbase Line- III	92.63	
		Unit-IV	0.00	220kV CHP - Semtokha Line- IV	54.92	
		-	-	220kV Malbase - Birpara Line	-68.09	
		-	-	66kV CHP - Chumdo Line	16.30	
		-	-	66kV CHP - Gedu Line	4.03	
		-	-	3x3MVA, 66/11kV TFR	1.35	
Total	178.48	Auxiliary Consumption & Transformation Losses at Generator end	2.89%			
4	24MW BHP (U/S)	Unit-I	6.30	220kV BHP - Semtokha Line	66.30	
		Unit-II	5.90	66kV BHP - Lobeyasa Line	28.06	
		Total	12.20	220kV BHP - Tsirang Line	-58.40	
5	40MW BHP (L/S)	Unit-I	11.90	5MVA, 66/11kV TFR	0.13	
		Unit-II	11.90	30MVA ICT, 220/66kV (HV)	16.22	
		Total	23.80	Auxiliary Consumption & Transformation Losses at Generator end	-0.25%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	42.31	Unit-I on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	42.47	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	12.98	
		-	-	5MVA, 220/33kV TFR	0.10	
Total	42.47	Auxiliary Consumption & Transformation Losses at Generator end	0.14%			
7	60MW KHP	Unit-I	11.06	132kV KHP - Nangkhoh Line	17.18	Unit-IV under Annual Maintenance.
		Unit-II	11.07	132kV KHP - Kilikhar Line	15.38	
		Unit-III	11.08	5MVA, 132/11kV TFR	0.25	
		Unit-IV	0.00	132kV Motanga - Rangia Line	4.22	
		Total	33.21	Auxiliary Consumption & Transformation Losses at Generator end	1.20%	

Note: Generation-Load Summary (MW) for December 02, 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	593.55	343.73	334.98	268.98	8.75
2	Eastern Grid	219.42	81.61	79.82	118.65	1.79
Total		812.97	425.34	414.80	387.63	10.54

Note: Generation-Load Summary for December 02, 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	482.10	213.69	208.24	245.81	5.45
2	Eastern Grid	187.12	55.11	53.57	154.61	1.54
Total		669.22	268.80	261.81	400.42	6.99

NOTE-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.