

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date: **October 4, 2021**
Hours: **19:00 Hours**

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	165.58	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	166.65	400kV THP - Siliguri Line - II	254.41	+	
		Unit- III	168.64	400kV THP - Siliguri Line- IV	244.00	+	
		Unit- IV	100.66	400kV THP - Malbase Line - III	296.98	+	
		Unit- V	98.55	400kV Malbase - Siliguri Line	226.36	+	
		Unit- VI	99.47	-	-	-	
		Total	799.55	Auxiliary Consumption & Transformation Losses at Gen. end	0.520%		
2	720MW MHP	Unit-I	145.57	400kV MHP - Jigmeling Line - I	213.68	+	Unit-II on standby. 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line I (Interim) on standby. (There is MW power difference of 8.62 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	145.77	400kV MHP - Jigmeling Line - III	215.25	+	
		Unit-IV	140.52	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmoo Line - I	0.00		
		-	-	132kV MHP - Yurmoo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	39.10	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	94.54	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	144.80	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	144.80	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.18	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.37	+	
		-	-	220kV Tsirang - Jigmeling Line	5.88	+	
-	-	132kV Gelephu - Salakati Line	10.40	+			
Total	431.86	Auxiliary Consumption & Transformation Losses at Gen. end	0.678%				
3	336MW CHP	Unit- I	91.94	220kV CHP - Birpara Line- I	102.46	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.27	220kV CHP - Birpara Line- II	102.43	+	
		Unit- III	92.24	220kV CHP - Malbase Line- III	136.94	+	
		Unit- IV	91.31	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	61.49	+	
		-	-	66kV CHP - Chumdo Line	18.15	+	
		-	-	66kV CHP - Gedu Line	4.30	+	
		-	-	3x3MVA, 66/11kV TFR	1.32	+	
Total	366.76	Auxiliary Consumption & Transformation Losses at Gen. end	0.316%				
4	24MW BHP (U/S)	Unit- I	11.40	220kV BHP - Semtokha Line	92.33	+	
		Unit- II	11.20	66kV BHP - Lobeyssa Line	30.10	+	
		Total	22.60	220kV BHP - Tsirang Line	-61.31	-	
5	40MW BHP (L/S)	Unit- I	20.30	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	20.10	30MVA ICT, 220/66kV (HV)	9.74	+	
		Total	40.40	Auxiliary Consumption & Transformation Losses at Gen. end	1.571%		
6	126MW DHP	Unit-I	49.85	220kV DHP - Tsirang Line	71.38	+	220kV DHP_Dagapela Line on standby.
		Unit-II	21.97	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.64	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		Total	71.82	Auxiliary Consumption & Transformation Losses at Gen. end	0.195%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkor Line	40.08	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	25.04	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	42.05	+	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Gen. end	0.727%		

Note: Generation-Load Summary (MW) for October 04, 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) at Generator end.
1	Western Grid	1,301.13	304.10	300.29	991.15	3.81
2	Eastern Grid	497.86	67.15	63.74	436.59	3.41
	Total	1,798.99	371.25	364.03	1,427.74	7.22

Note: Generation-Load Summary for October 04, 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
1	Western Grid	1,663.58	210.11	197.03	1,362.60	13.08
2	Eastern Grid	586.63	56.70	53.42	620.80	3.28
	Total	2,250.21	266.81	250.45	1,983.40	16.36

NOTE-BHP, JLG and MHPA data collected from site

1. The Instantaneous load balance is 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

Maximum Load/Demand till Date

Date:	October 5, 2021
Hours:	09:00 Hours

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	166.66	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	118.32	400kV THP - Siliguri Line - II	226.03	+	
		Unit- III	99.55	400kV THP - Siliguri Line- IV	217.30	+	
		Unit- IV	100.01	400kV THP - Malbase Line - III	234.36	+	
		Unit- V	97.79	400kV Malbase - Siliguri Line	208.28	+	
		Unit- VI	100.65	-	-	-	
		Total	682.98	Auxiliary Consumption & Transformation Losses at Generator end	0.775%		
2	720MW MHP	Unit-I	140.39	400kV MHP - Jigmeling Line - I	208.34	+	Unit-II on standby. 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line I (Interim) on standby. (There is MW power difference of 7 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	137.70	400kV MHP - Jigmeling Line - III	209.13	+	
		Unit-IV	140.51	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmoo Line - I	0.00		
		-	-	132kV MHP - Yurmoo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	6.47	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	99.63	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	152.75	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	152.75	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	10.02	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	10.15	+	
		-	-	220kV Tsirang - Jigmeling Line	16.17	+	
-	-	132kV Gelephu - Salakati Line	8.24	+			
Total	418.60	Auxiliary Consumption & Transformation Losses at Generator end	0.270%				
3	336MW CHP	Unit- I	91.37	220kV CHP - Birpara Line- I	98.91	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.35	220kV CHP - Birpara Line- II	98.92	+	
		Unit- III	91.30	220kV CHP - Malbase Line- III	145.47	+	
		Unit- IV	91.87	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	46.57	+	
		-	-	66kV CHP - Chumdo Line	14.04	+	
		-	-	66kV CHP - Gedu Line	4.43	+	
		-	-	3x3MVA, 66/11kV TFR	0.95	+	
Total	365.89	Auxiliary Consumption & Transformation Losses at Generator end	0.866%				
4	24MW BHP (U/S)	Unit- I	11.00	220kV BHP - Semtokha Line	80.50	+	
		Unit- II	10.80	66kV BHP - Lobeyssa Line	27.50	+	
		Total	21.80	220kV BHP - Tsirang Line	-48.50	-	
5	40MW BHP (L/S)	Unit- I	19.50	5MVA, 66/11kV TFR	0.96	+	
		Unit- II	19.60	30MVA ICT, 220/66kV (HV)	7.57	+	
		Total	39.10	Auxiliary Consumption & Transformation Losses at Generator end	0.722%		
6	126MW DHP	Unit-I	48.37	220kV DHP - Tsirang Line	67.89	+	220kV DHP_Dagapela Line on standby.
		Unit-II	19.97	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.84	+	
		-	-	5MVA, 220/33kV TFR	0.44	+	
		Total	68.34	Auxiliary Consumption & Transformation Losses at Generator end	0.015%		
7	60MW KHP	Unit- I	16.53	132kV KHP - Nangkhon Line	43.30	+	
		Unit-II	16.59	132kV KHP - Kilikhar Line	22.01	+	
		Unit- III	16.58	5MVA, 132/11kV TFR	0.31	+	
		Unit- IV	16.51	132kV Motanga - Rangia Line	33.14	+	
		Total	66.21	Auxiliary Consumption & Transformation Losses at Generator end	0.891%		

Note: Generation-Load Summary (MW) for October 05, 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) at Generator end.
1	Western Grid	1,178.11	265.93	258.86	896.01	7.07
2	Eastern Grid	484.81	54.47	52.75	446.51	1.72
	Total	1,662.92	320.40	311.61	1,342.52	8.79

Note: Generation-Load Summary for October 05, 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
1	Western Grid	1,502.30	193.14	178.27	1,129.88	14.87
2	Eastern Grid	659.46	49.42	45.24	690.04	4.18
	Total	2,161.76	242.56	223.51	1,819.92	19.05

NOTE-BHP & MHPA data collected from site

1. The Instantaneous load balance is 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.
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