

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date: **October 18, 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	0.00	400kV THP - Siliguri Line - I	0.00		Unit-I under AMP. 400kV THP-Siliguri line I under breakdown.
		Unit- II	97.83	400kV THP - Siliguri Line - II	219.42	+	
		Unit- III	138.62	400kV THP - Siliguri Line- IV	209.39	+	
		Unit- IV	168.58	400kV THP - Malbase Line - III	287.26	+	
		Unit- V	146.97	400kV Malbase - Siliguri Line	189.15	+	
		Unit- VI	169.08	-	-	-	
		Total	721.08	Auxiliary Consumption & Transformation Losses at Gen. end	0.695%		
2	720MW MHP	Unit-I	125.76	400kV MHP - Jigmeling Line - I	180.23	+	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.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	126.67	400kV MHP - Jigmeling Line - III	181.39	+	
		Unit-IV	110.45	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)	-0.23	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	84.36	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	131.25	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	130.50	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	30.21	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	30.60	+	
		-	-	220kV Tsirang - Jigmeling Line	63.71	+	
-	-	132kV Gelephu - Salakati Line	13.62	+			
Total	362.88	Auxiliary Consumption & Transformation Losses at Gen. end	0.347%				
3	336MW CHP	Unit- I	81.88	220kV CHP - Birpara Line- I	76.31	+	66kV CHP_Gedu line opened at 10:01hrs (08/10/2021) to regulate 66kV voltage.
		Unit- II	83.40	220kV CHP - Birpara Line- II	76.29	+	
		Unit- III	84.78	220kV CHP - Malbase Line- III	104.82	+	
		Unit- IV	82.54	220kV CHP - Semtokha Line- IV	49.25	+	
		-	-	220kV Malbase - Birpara Line	43.39	+	
		-	-	66kV CHP - Chumdo Line	24.10	+	
		-	-	66kV CHP - Gedu Line	0.00		
		-	-	3x3MVA, 66/11kV TFR	1.40	+	
Total	332.60	Auxiliary Consumption & Transformation Losses at Gen. end	0.129%				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	61.00	+	Lobeysa Line
		Unit- II	12.40	66kV BHP - Lobeysa Line	9.78	+	
		Total	24.70	220kV BHP - Tsirang Line	-4.41	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.59		
		Unit- II	21.00	30MVA ICT, 220/66kV (HV)	15.15	+	
		Total	41.70	Auxiliary Consumption & Transformation Losses at Gen. end	-0.843%		
6	126MW DHP	Unit-I	42.35	220kV DHP - Tsirang Line	70.92	+	220kV DHP_Dagapela Line on standby.
		Unit-II	28.99	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.35	+	
		-	-	5MVA, 220/33kV TFR	0.40	+	
		Total	71.34	Auxiliary Consumption & Transformation Losses at Gen. end	0.028%		
7	60MW KHP	Unit- I	16.60	132kV KHP - Nangkhon Line	38.88	+	
		Unit-II	16.56	132kV KHP - Kilikhar Line	26.36	+	
		Unit- III	16.61	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	16.57	132kV Motanga - Rangia Line	51.27	+	
		Total	66.34	Auxiliary Consumption & Transformation Losses at Gen. end	1.055%		

Note: Generation-Load Summary (MW) for October 18, 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	1,191.42	313.76	311.21	813.95	2.55
2	Eastern Grid	429.22	81.93	79.97	411.00	1.96
	Total	1,620.64	395.69	391.18	1,224.95	4.51

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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	1,003.45	222.40	213.60	707.67	8.80
2	Eastern Grid	423.52	51.71	49.28	445.19	2.43
	Total	1,426.97	274.11	262.88	1,152.86	11.23

NOTE-BHP, MHPA and Rangia 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 19, 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	184.18	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	185.00	400kV THP - Siliguri Line - II	357.18	+	
		Unit- III	186.83	400kV THP - Siliguri Line- IV	341.14	+	
		Unit- IV	183.55	400kV THP - Malbase Line - III	398.32	+	
		Unit- V	180.89	400kV Malbase - Siliguri Line	322.88	+	
		Unit- VI	185.64	-	-	-	
		Total	1,106.09	Auxiliary Consumption & Transformation Losses at Generator end	0.854%		
2	720MW MHP	Unit-I	197.97	400kV MHP - Jigmeling Line - I	390.41	+	400kV MHP-JLG Line II & IV on standby. 132kVMHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line I (Interim) on standby.
		Unit-II	195.91	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	197.75	400kV MHP - Jigmeling Line - III	392.06	+	
		Unit-IV	196.05	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)	-35.72	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	200.71	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	301.60	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	300.85	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	30.33	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	30.71	+	
		-	-	220kV Tsirang - Jigmeling Line	99.78	+	
-	-	132kV Gelephu - Salakati Line	27.20	+			
Total	787.68	Auxiliary Consumption & Transformation Losses at Generator end	0.661%				
3	336MW CHP	Unit- I	92.04	220kV CHP - Birpara Line- I	94.51	+	66kV CHP_Gedu line opened at 10:01hrs (08/10/2021) to regulate 66kV voltage.
		Unit- II	91.18	220kV CHP - Birpara Line- II	94.41	+	
		Unit- III	91.78	220kV CHP - Malbase Line- III	135.33	+	
		Unit- IV	92.06	220kV CHP - Semtokha Line- IV	21.92	+	
		-	-	220kV Malbase - Birpara Line	48.93	+	
		-	-	66kV CHP - Chumdo Line	18.95	+	
		-	-	66kV CHP - Gedu Line	0.00		
		-	-	3x3MVA, 66/11kV TFR	1.03	+	
Total	367.06	Auxiliary Consumption & Transformation Losses at Generator end	0.248%				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	81.30	+	
		Unit- II	12.20	66kV BHP - Lobeyssa Line	6.60	+	
		Total	24.50	220kV BHP - Tsirang Line	-22.61	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.89		
		Unit- II	21.00	30MVA ICT, 220/66kV (HV)	-16.87	-	
		Total	41.70	Auxiliary Consumption & Transformation Losses at Generator end	0.030%		
6	126MW DHP	Unit-I	63.61	220kV DHP - Tsirang Line	126.20	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.15	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.70	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		Total	126.76	Auxiliary Consumption & Transformation Losses at Generator end	0.205%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	42.08	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	23.37	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.34	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	34.35	+	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Generator end	0.322%		

Note: Generation-Load Summary (MW) for October 19, 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	1,666.11	307.28	299.34	1,259.05	7.94
2	Eastern Grid	853.68	88.75	83.33	864.71	5.42
	Total	2,519.79	396.03	382.67	2,123.76	13.36

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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	971.79	161.57	150.96	753.22	10.61
2	Eastern Grid	419.36	29.42	28.50	446.94	0.92
	Total	1,391.15	190.99	179.46	1,200.16	11.53

NOTE-BHP,MHPA, KHP, JLG & Rangia 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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