

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date: **September 20, 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	137.31	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	167.50	400kV THP - Siliguri Line - II	294.96		
		Unit- III	139.36	400kV THP - Siliguri Line- IV	283.28		
		Unit- IV	168.55	400kV THP - Malbase Line - III	362.87		
		Unit- V	166.92	400kV Malbase - Siliguri Line	260.34	-	
		Unit- VI	169.41	-	-	-	
		Total	949.05	Auxiliary Consumption & Transformation Losses at Gen. end	0.837%		
2	720MW MHP	Unit-I	140.12	400kV MHP - Jigmeling Line - I	282.85	+	400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line I (Interim) on standby. (There is MW power difference of 5.96 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	140.32	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	140.68	400kV MHP - Jigmeling Line - III	284.73	+	
		Unit-IV	150.74	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)	-5.45	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	141.08	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	212.45	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	212.37	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	34.84	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	35.44	+	
		-	-	220kV Tsirang - Jigmeling Line	78.89	+	
-	-	132kV Gelephu - Salakati Line	22.40	+			
Total	571.86	Auxiliary Consumption & Transformation Losses at Gen. end	0.748%				
3	336MW CHP	Unit- I	91.68	220kV CHP - Birpara Line- I	90.77	+	
		Unit- II	91.27	220kV CHP - Birpara Line- II	90.83	+	
		Unit- III	90.62	220kV CHP - Malbase Line- III	109.27	+	
		Unit- IV	91.54	220kV CHP - Semtokha Line- IV	54.76	+	
		-	-	220kV Malbase - Birpara Line	62.93	+	
		-	-	66kV CHP - Chumdo Line	11.33	+	
		-	-	66kV CHP - Gedu Line	4.88	+	
		-	-	3x3MVA, 66/11kV TFR	1.40	+	
Total	365.11	Auxiliary Consumption & Transformation Losses at Gen. end	0.512%				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	62.90	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	10.00	+	
		Total	24.50	220kV BHP - Tsirang Line	-8.19	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	-13.08	-	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Gen. end	1.056%		
6	126MW DHP	Unit-I	60.42	220kV DHP - Tsirang Line	90.86	+	220kV DHP_Dagapela Line on standby.
		Unit-II	31.01	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.49	+	
		-	-	5MVA, 220/33kV TFR	0.32	+	
		Total	91.43	Auxiliary Consumption & Transformation Losses at Gen. end	0.273%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	36.41	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	28.39	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	46.22	+	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Gen. end	1.333%		

Note: Generation-Load Summary (MW) for September 20, 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	1,471.89	309.89	301.62	1,083.11	8.27
2	Eastern Grid	637.86	82.23	77.07	634.52	5.16
	Total	2,109.75	392.12	378.69	1,717.63	13.43

Note: Generation-Load Summary for September 20, 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	1,654.69	201.65	185.62	1,372.39	16.03
2	Eastern Grid	707.84	54.12	51.37	734.37	2.75
	Total	2,362.53	255.77	236.99	2,106.76	18.78

NOTE-BHP, JLG, KHP, DHP 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:	September 21, 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	140.00	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	170.00	400kV THP - Siliguri Line - II	307.00	+	
		Unit- III	140.00	400kV THP - Siliguri Line- IV	291.00	+	
		Unit- IV	170.00	400kV THP - Malbase Line - III	346.00	+	
		Unit- V	170.00	400kV Malbase - Siliguri Line	274.00	+	
		Unit- VI	170.00	-	-	-	
		Total	960.00	Auxiliary Consumption & Transformation Losses at Generator end	1.667%		
2	720MW MHP	Unit-I	140.21	400kV MHP - Jigmeling Line - I	283.25	+	400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line I (Interim) on standby. (There is MW power difference of 26.34 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	140.29	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	140.88	400kV MHP - Jigmeling Line - III	285.20	+	
		Unit-IV	150.63	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)	-38.21	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	148.35	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	225.10	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	224.90	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	22.77	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	22.90	+	
		-	-	220kV Tsirang - Jigmeling Line	86.90	+	
-	-	132kV Gelephu - Salakati Line	21.80	+			
Total	572.01	Auxiliary Consumption & Transformation Losses at Generator end	0.622%				
3	336MW CHP	Unit- I	92.10	220kV CHP - Birpara Line- I	87.89	+	
		Unit- II	91.92	220kV CHP - Birpara Line- II	87.61	+	
		Unit- III	92.25	220kV CHP - Malbase Line- III	129.28	+	
		Unit- IV	91.50	220kV CHP - Semtokha Line- IV	48.58	+	
		-	-	220kV Malbase - Birpara Line	43.70	+	
		-	-	66kV CHP - Chumdo Line	6.90	+	
		-	-	66kV CHP - Gedu Line	5.20	+	
		-	-	3x3MVA, 66/11kV TFR	0.66	+	
Total	367.77	Auxiliary Consumption & Transformation Losses at Generator end	0.449%				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	58.00	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	7.31	+	
		Total	24.50	220kV BHP - Tsirang Line	0.20	+	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	-16.65	-	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Generator end	-0.166%		
6	126MW DHP	Unit-I	59.40	220kV DHP - Tsirang Line	88.86	+	220kV DHP_Dagapela Line on standby.
		Unit-II	29.99	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.66	+	
		-	-	5MVA, 220/33kV TFR	0.31	+	
		Total	89.39	Auxiliary Consumption & Transformation Losses at Generator end	0.246%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	41.44	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	23.98	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.33	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	40.54	+	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Generator end	0.376%		

Note: Generation-Load Summary (MW) for September 21, 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	1,483.46	305.36	289.26	1,091.20	16.10
2	Eastern Grid	638.01	64.22	60.41	660.69	3.81
	Total	2,121.47	369.58	349.67	1,751.89	19.91

Note: Generation-Load Summary for September 21, 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	1,539.83	185.17	168.11	1,285.56	17.06
2	Eastern Grid	751.56	40.28	37.83	780.38	2.45
	Total	2,291.39	225.45	205.94	2,065.94	19.51

NOTE-THP,MHPA,CHP,BHP,DHP & KHP 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.