

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date: **September 19, 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	122.11	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	133.25	400kV THP - Siliguri Line - II	246.32		
		Unit- III	132.95	400kV THP - Siliguri Line- IV	235.66		
		Unit- IV	133.39	400kV THP - Malbase Line - III	295.59		
		Unit- V	132.81	400kV Malbase - Siliguri Line	217.41	-	
		Unit- VI	133.21	-	-	-	
		Total	787.72	Auxiliary Consumption & Transformation Losses at Gen. end	1.289%		
2	720MW MHP	Unit-I	166.14	400kV MHP - Jigmeling Line - I	310.93	+	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 11.96 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	140.13	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	155.74	400kV MHP - Jigmeling Line - III	312.67	+	
		Unit-IV	165.19	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)	-16.70	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	157.08	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	237.43	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	237.43	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	29.70	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	30.20	+	
		-	-	220kV Tsirang - Jigmeling Line	79.92	+	
-	-	132kV Gelephu - Salakati Line	21.69	+			
Total	627.20	Auxiliary Consumption & Transformation Losses at Gen. end	0.574%				
3	336MW CHP	Unit- I	91.70	220kV CHP - Birpara Line- I	89.94	+	
		Unit- II	91.11	220kV CHP - Birpara Line- II	90.30	+	
		Unit- III	91.58	220kV CHP - Malbase Line- III	120.80	+	
		Unit- IV	92.79	220kV CHP - Semtokha Line- IV	45.82	+	
		-	-	220kV Malbase - Birpara Line	53.68	+	
		-	-	66kV CHP - Chumdo Line	10.99	+	
		-	-	66kV CHP - Gedu Line	6.04	+	
		-	-	3x3MVA, 66/11kV TFR	1.60	+	
		Total	367.18	Auxiliary Consumption & Transformation Losses at Gen. end	0.460%		
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	73.30	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	10.78	+	
		Total	24.60	220kV BHP - Tsirang Line	-18.64	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	-12.92	-	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Gen. end	0.090%		
6	126MW DHP	Unit-I	50.32	220kV DHP - Tsirang Line	102.79	+	220kV DHP_Dagapela Line on standby.
		Unit-II	53.04	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.50	+	
		-	-	5MVA, 220/33kV TFR	0.34	+	
		Total	103.36	Auxiliary Consumption & Transformation Losses at Gen. end	0.223%		
7	60MW KHP	Unit- I	16.56	132kV KHP - Nangkhoh Line	37.83	+	
		Unit-II	16.60	132kV KHP - Kilikhar Line	27.31	+	
		Unit- III	16.51	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	16.60	132kV Motanga - Rangia Line	38.26	+	
		Total	66.27	Auxiliary Consumption & Transformation Losses at Gen. end	1.102%		

Note: Generation-Load Summary (MW) for September 19, 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	1,324.66	311.43	301.80	933.31	9.63
2	Eastern Grid	693.47	81.50	77.17	691.89	4.33
	Total	2,018.13	392.93	378.97	1,625.20	13.96

Note: Generation-Load Summary for September 19, 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	1,656.16	211.63	195.67	1,359.15	15.96
2	Eastern Grid	1,656.16	56.11	51.94	736.15	4.17
	Total	3,312.32	267.74	247.61	2,095.30	20.13

NOTE-BHP 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 20, 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	170.00	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	170.00	400kV THP - Siliguri Line - II	325.00	+	
		Unit- III	170.00	400kV THP - Siliguri Line- IV	309.00	+	
		Unit- IV	170.00	400kV THP - Malbase Line - III	366.00	+	
		Unit- V	170.00	400kV Malbase - Siliguri Line	293.00	+	
		Unit- VI	170.00	-	-	-	
		Total	1,020.00	Auxiliary Consumption & Transformation Losses at Generator end	1.961%		
2	720MW MHP	Unit-I	160.14	400kV MHP - Jigmeling Line - I	300.89	+	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 12.55 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	140.11	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	145.78	400kV MHP - Jigmeling Line - III	302.66	+	
		Unit-IV	160.62	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)	-40.90	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	157.80	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	238.60	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	238.60	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	22.70	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.10	+	
		-	-	220kV Tsirang - Jigmeling Line	89.60	+	
-	-	132kV Gelephu - Salakati Line	21.20	+			
Total	606.65	Auxiliary Consumption & Transformation Losses at Generator end	0.511%				
3	336MW CHP	Unit- I	92.10	220kV CHP - Birpara Line- I	87.64	+	
		Unit- II	91.86	220kV CHP - Birpara Line- II	87.26	+	
		Unit- III	92.43	220kV CHP - Malbase Line- III	132.71	+	
		Unit- IV	92.20	220kV CHP - Semtokha Line- IV	44.38	+	
		-	-	220kV Malbase - Birpara Line	41.00	+	
		-	-	66kV CHP - Chumdo Line	6.50	+	
		-	-	66kV CHP - Gedu Line	6.20	+	
		-	-	3x3MVA, 66/11kV TFR	0.73	+	
		Total	368.59	Auxiliary Consumption & Transformation Losses at Generator end	0.860%		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	62.74	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	6.50	+	
		Total	24.50	220kV BHP - Tsirang Line	-4.23	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	-16.47	-	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Generator end	0.603%		
6	126MW DHP	Unit-I	63.63	220kV DHP - Tsirang Line	96.28	+	220kV DHP_Dagapela Line on standby.
		Unit-II	33.16	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.60	+	
		-	-	5MVA, 220/33kV TFR	0.50	+	
		Total	96.79	Auxiliary Consumption & Transformation Losses at Generator end	0.010%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	41.53	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	23.64	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.24	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	38.38	+	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Generator end	0.889%		

Note: Generation-Load Summary (MW) for September 20, 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	1,551.68	319.18	297.20	1,142.90	21.98
2	Eastern Grid	672.65	67.67	63.98	694.58	3.69
	Total	2,224.33	386.85	361.18	1,837.48	25.67

Note: Generation-Load Summary for September 20, 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	1,649.70	175.87	159.28	1,405.13	16.59
2	Eastern Grid	751.56	35.65	33.33	784.61	2.32
	Total	2,401.26	211.52	192.61	2,189.74	18.91

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.
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