

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date: **September 23, 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	136.04	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	138.39	400kV THP - Siliguri Line - II	255.89	+	
		Unit- III	138.92	400kV THP - Siliguri Line- IV	245.18	+	
		Unit- IV	138.10	400kV THP - Malbase Line - III	322.14	+	
		Unit- V	137.01	400kV Malbase - Siliguri Line	221.87	+	
		Unit- VI	140.08	-	-	-	
		Total	828.54	Auxiliary Consumption & Transformation Losses at Gen. end	0.643%		
2	720MW MHP	Unit-I	109.89	400kV MHP - Jigmeling Line - I	253.80	+	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 6.72 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	130.21	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	131.17	400kV MHP - Jigmeling Line - III	255.58	+	
		Unit-IV	140.50	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)	-10.64	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	127.26	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	194.59	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	193.84	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	34.78	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	35.35	+	
		-	-	220kV Tsirang - Jigmeling Line	83.29	+	
-	-	132kV Gelephu - Salakati Line	26.20	+			
Total	511.77	Auxiliary Consumption & Transformation Losses at Gen. end	0.467%				
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	94.03	+	
		Unit- II	91.18	220kV CHP - Birpara Line- II	93.69	+	
		Unit- III	91.50	220kV CHP - Malbase Line- III	103.33	+	
		Unit- IV	91.26	220kV CHP - Semtokha Line- IV	56.68	+	
		-	-	220kV Malbase - Birpara Line	72.99	+	
		-	-	66kV CHP - Chumdo Line	9.60	+	
		-	-	66kV CHP - Gedu Line	4.87	+	
		-	-	3x3MVA, 66/11kV TFR	0.97	+	
		Total	365.34	Auxiliary Consumption & Transformation Losses at Gen. end	0.594%		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	35.30	+	
		Unit- II	12.20	66kV BHP - Lobeyssa Line	27.80	+	
		Total	24.50	220kV BHP - Tsirang Line	1.62	+	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.83	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	5.40	+	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Gen. end	1.131%		
6	126MW DHP	Unit-I	55.40	220kV DHP - Tsirang Line	84.20	+	220kV DHP_Dagapela Line on standby.
		Unit-II	29.99	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.92	+	
		-	-	5MVA, 220/33kV TFR	0.54	+	
		Total	85.39	Auxiliary Consumption & Transformation Losses at Gen. end	0.761%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	37.62	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	27.33	+	
		Unit- III	16.46	5MVA, 132/11kV TFR	0.39	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	53.80	+	
		Total	65.96	Auxiliary Consumption & Transformation Losses at Gen. end	0.934%		

Note: Generation-Load Summary (MW) for September 23, 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	1,345.57	278.63	271.65	983.65	6.98
2	Eastern Grid	577.73	65.33	62.32	595.69	3.01
	Total	1,923.30	343.96	333.97	1,579.34	9.99

Note: Generation-Load Summary for September 23, 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	1,679.49	199.79	181.48	1,390.40	18.31
2	Eastern Grid	658.77	53.67	50.16	649.40	3.51
	Total	2,338.26	253.46	231.64	2,039.80	21.82

NOTE-BHP, KHP, 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: September 24, 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	136.66	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	136.27	400kV THP - Siliguri Line - II	264.30	+	
		Unit- III	138.87	400kV THP - Siliguri Line- IV	253.47	+	
		Unit- IV	138.49	400kV THP - Malbase Line - III	303.68	+	
		Unit- V	137.12	400kV Malbase - Siliguri Line	237.14	+	
		Unit- VI	140.02	-	-	-	
		Total	827.43	Auxiliary Consumption & Transformation Losses at Generator end	0.723%		
2	720MW MHP	Unit-I	124.77	400kV MHP - Jigmeling Line - I	261.59	+	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 8.51 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	130.30	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	130.74	400kV MHP - Jigmeling Line - III	263.15	+	
		Unit-IV	140.50	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)	-25.50	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	134.53	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	204.96	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	203.81	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	24.23	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	24.62	+	
		-	-	220kV Tsirang - Jigmeling Line	77.49	+	
-	-	132kV Gelephu - Salakati Line	22.20	+			
Total	526.31	Auxiliary Consumption & Transformation Losses at Generator end	0.298%				
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	87.14	+	
		Unit- II	91.18	220kV CHP - Birpara Line- II	87.40	+	
		Unit- III	91.50	220kV CHP - Malbase Line- III	134.09	+	
		Unit- IV	91.26	220kV CHP - Semtokha Line- IV	43.55	+	
		-	-	220kV Malbase - Birpara Line	36.57	+	
		-	-	66kV CHP - Chumdo Line	5.70	+	
		-	-	66kV CHP - Gedu Line	6.66	+	
		-	-	3x3MVA, 66/11kV TFR	0.71	+	
		Total	365.34	Auxiliary Consumption & Transformation Losses at Generator end	0.025%		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	39.35	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	27.10	+	
		Total	24.50	220kV BHP - Tsirang Line	-1.92	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.84	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	4.70	+	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Generator end	1.403%		
6	126MW DHP	Unit-I	52.40	220kV DHP - Tsirang Line	81.95	+	220kV DHP_Dagapela Line on standby.
		Unit-II	29.99	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.59	+	
		-	-	5MVA, 220/33kV TFR	0.40	+	
		Total	82.39	Auxiliary Consumption & Transformation Losses at Generator end	0.049%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	39.78	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	25.09	+	
		Unit- III	16.17	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	45.00	+	
		Total	65.67	Auxiliary Consumption & Transformation Losses at Generator end	0.725%		

Note: Generation-Load Summary (MW) for September 24, 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	1,341.46	297.95	292.50	966.02	5.45
2	Eastern Grid	591.98	58.97	56.92	610.50	2.05
	Total	1,933.44	356.92	349.42	1,576.52	7.50

Note: Generation-Load Summary for September 24, 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	1,683.44	190.26	172.97	1,410.21	17.29
2	Eastern Grid	659.09	48.89	44.86	693.17	4.03
	Total	2,342.53	239.15	217.83	2,103.38	21.32

NOTE-BHP & all eastern data collected from site

- 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:
 - 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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