

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date: **September 22, 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	136.38	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	165.68	400kV THP - Siliguri Line - II	283.46	+	
		Unit- III	169.31	400kV THP - Siliguri Line- IV	271.10	+	
		Unit- IV	168.60	400kV THP - Malbase Line - III	354.59	+	
		Unit- V	137.52	400kV Malbase - Siliguri Line	246.76	+	
		Unit- VI	139.01	-	-	-	
		Total	916.50	Auxiliary Consumption & Transformation Losses at Gen. end	0.802%		
2	720MW MHP	Unit-I	110.24	400kV MHP - Jigmeling Line - I	253.20	+	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 10.51 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	129.58	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	131.36	400kV MHP - Jigmeling Line - III	254.91	+	
		Unit-IV	140.43	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)	-6.16	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	125.81	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	190.70	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	190.70	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	34.53	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	35.11	+	
		-	-	220kV Tsirang - Jigmeling Line	78.71	+	
-	-	132kV Gelephu - Salakati Line	23.78	+			
Total	511.61	Auxiliary Consumption & Transformation Losses at Gen. end	0.684%				
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	91.27	+	
		Unit- II	91.18	220kV CHP - Birpara Line- II	91.21	+	
		Unit- III	91.50	220kV CHP - Malbase Line- III	108.07	+	
		Unit- IV	91.26	220kV CHP - Semtokha Line- IV	56.53	+	
		-	-	220kV Malbase - Birpara Line	65.72	+	
		-	-	66kV CHP - Chumdo Line	11.16	+	
		-	-	66kV CHP - Gedu Line	5.37	+	
		-	-	3x3MVA, 66/11kV TFR	1.26	+	
		Total	365.34	Auxiliary Consumption & Transformation Losses at Gen. end	0.129%		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	42.82	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	27.25	+	
		Total	24.50	220kV BHP - Tsirang Line	-5.57	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.82	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	6.41	+	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Gen. end	1.478%		
6	126MW DHP	Unit-I	58.38	220kV DHP - Tsirang Line	87.83	+	220kV DHP_Dagapela Line on standby.
		Unit-II	30.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.17	+	
		-	-	5MVA, 220/33kV TFR	0.54	+	
		Total	88.38	Auxiliary Consumption & Transformation Losses at Gen. end	0.011%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	36.71	+	
		Unit-II	16.55	132kV KHP - Kilikhar Line	28.03	+	
		Unit- III	16.37	5MVA, 132/11kV TFR	0.74	+	
		Unit- IV	16.47	132kV Motanga - Rangia Line	44.49	+	
		Total	65.89	Auxiliary Consumption & Transformation Losses at Gen. end	0.624%		

Note: Generation-Load Summary (MW) for September 22, 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	1,436.52	308.29	301.65	1,049.52	6.64
2	Eastern Grid	577.50	80.73	76.82	575.48	3.91
	Total	2,014.02	389.02	378.47	1,625.00	10.55

Note: Generation-Load Summary for September 22, 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	1,683.32	180.22	162.24	1,411.37	17.98
2	Eastern Grid	658.89	58.03	54.45	692.59	3.58
	Total	2,342.21	238.25	216.69	2,103.96	21.56

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 23, 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	137.56	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	167.89	400kV THP - Siliguri Line - II	282.30	+	
		Unit- III	138.97	400kV THP - Siliguri Line- IV	269.61	+	
		Unit- IV	167.51	400kV THP - Malbase Line - III	332.04	+	
		Unit- V	137.40	400kV Malbase - Siliguri Line	251.23	+	
		Unit- VI	139.70	-	-	-	
		Total	889.03	Auxiliary Consumption & Transformation Losses at Generator end	0.571%		
2	720MW MHP	Unit-I	125.25	400kV MHP - Jigmeling Line - I	262.07	+	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 16 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	130.13	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	131.33	400kV MHP - Jigmeling Line - III	262.47	+	
		Unit-IV	140.55	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)	-26.38	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	133.80	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	205.14	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	204.51	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	24.10	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	24.55	+	
		-	-	220kV Tsirang - Jigmeling Line	76.87	+	
-	-	132kV Gelephu - Salakati Line	21.60	+			
Total	527.26	Auxiliary Consumption & Transformation Losses at Generator end	0.516%				
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	83.42	+	
		Unit- II	91.18	220kV CHP - Birpara Line- II	83.46	+	
		Unit- III	91.50	220kV CHP - Malbase Line- III	123.21	+	
		Unit- IV	91.26	220kV CHP - Semtokha Line- IV	57.90	+	
		-	-	220kV Malbase - Birpara Line	40.50	+	
		-	-	66kV CHP - Chumdo Line	10.24	+	
		-	-	66kV CHP - Gedu Line	4.56	+	
		-	-	3x3MVA, 66/11kV TFR	1.09	+	
Total	365.34	Auxiliary Consumption & Transformation Losses at Generator end	0.400%				
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	39.96	+	
		Unit- II	12.20	66kV BHP - Lobeyssa Line	29.00	+	
		Total	24.60	220kV BHP - Tsirang Line	-3.28	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.81	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	5.89	+	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Generator end	-0.136%		
6	126MW DHP	Unit-I	54.39	220kV DHP - Tsirang Line	83.90	+	220kV DHP_Dagapela Line on standby.
		Unit-II	29.96	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.63	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		Total	84.35	Auxiliary Consumption & Transformation Losses at Generator end	0.178%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	39.99	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	25.06	+	
		Unit- III	16.20	5MVA, 132/11kV TFR	0.31	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	36.39	+	
		Total	65.70	Auxiliary Consumption & Transformation Losses at Generator end	0.518%		

Note: Generation-Load Summary (MW) for September 23, 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	1,405.12	317.73	312.76	1,010.52	4.97
2	Eastern Grid	592.96	68.39	65.33	601.44	3.06
	Total	1,998.08	386.12	378.09	1,611.96	8.03

Note: Generation-Load Summary for September 23, 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	1,680.15	206.38	189.92	1,394.50	16.46
2	Eastern Grid	659.12	52.46	48.61	685.93	3.85
	Total	2,339.27	258.84	238.53	2,080.43	20.31

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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