

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	September 27, 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	136.79	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	138.32	400kV THP - Siliguri Line - II	257.88	+	
		Unit- III	139.36	400kV THP - Siliguri Line- IV	245.60	+	
		Unit- IV	119.30	400kV THP - Malbase Line - III	299.86	+	
		Unit- V	137.19	400kV Malbase - Siliguri Line	228.82	+	
		Unit- VI	139.48	-	-	-	
		Total	810.44	Auxiliary Consumption & Transformation Losses at Gen. end	0.876%		
2	720MW MHP	Unit-I	144.89	400kV MHP - Jigmeling Line - I	253.65	+	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 4.6 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	80.21	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	130.79	400kV MHP - Jigmeling Line - III	254.26	+	
		Unit-IV	155.19	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)	45.95	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	114.90	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	175.55	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	175.55	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	27.27	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	27.64	+	
		-	-	220kV Tsirang - Jigmeling Line	11.71	+	
-	-	132kV Gelephu - Salakati Line	19.04	+			
Total	511.08	Auxiliary Consumption & Transformation Losses at Gen. end	0.620%				
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	104.62	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.18	220kV CHP - Birpara Line- II	104.60	+	
		Unit- III	91.50	220kV CHP - Malbase Line- III	133.23	+	
		Unit- IV	91.26	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	67.66	+	
		-	-	66kV CHP - Chumdo Line	16.97	+	
		-	-	66kV CHP - Gedu Line	4.49	+	
		-	-	3x3MVA, 66/11kV TFR	1.25	+	
Total	365.34	Auxiliary Consumption & Transformation Losses at Gen. end	0.049%				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	92.60	+	Lobeysa Line
		Unit- II	12.20	66kV BHP - Lobeysa Line	29.24	+	
		Total	24.50	220kV BHP - Tsirang Line	-57.00	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	7.99	+	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Gen. end	0.860%		
6	126MW DHP	Unit-I	48.38	220kV DHP - Tsirang Line	74.93	+	220kV DHP_Dagapela Line on standby.
		Unit-II	27.03	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.58	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		Total	75.41	Auxiliary Consumption & Transformation Losses at Gen. end	0.239%		
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhon Line	36.27	+	
		Unit-II	16.56	132kV KHP - Kilikhar Line	27.24	+	
		Unit- III	15.42	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	16.03	132kV Motanga - Rangia Line	38.80	+	
		Total	64.50	Auxiliary Consumption & Transformation Losses at Gen. end	0.915%		

Note: Generation-Load Summary (MW) for September 27, 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	1,317.49	296.60	291.15	1,009.18	5.45
2	Eastern Grid	575.58	63.45	59.69	523.84	3.76
	Total	1,893.07	360.05	350.84	1,533.02	9.21

Note: Generation-Load Summary for September 27, 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	1,683.53	190.82	173.80	1,397.25	17.02
2	Eastern Grid	658.92	68.00	63.96	686.38	4.04
	Total	2,342.45	258.82	237.76	2,083.63	21.06

NOTE-BHP and MHPA 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.
 - The clocks of all the locations are not synchronized.
- 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 28, 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	136.24	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	138.18	400kV THP - Siliguri Line - II	249.07	+	
		Unit- III	138.17	400kV THP - Siliguri Line- IV	237.04	+	
		Unit- IV	69.92	400kV THP - Malbase Line - III	269.49	+	
		Unit- V	137.11	400kV Malbase - Siliguri Line	226.22	+	
		Unit- VI	139.43	-	-	-	
		Total	759.05	Auxiliary Consumption & Transformation Losses at Generator end	0.455%		
2	720MW MHP	Unit-I	144.85	400kV MHP - Jigmeling Line - I	297.83	+	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 11.26 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	154.74	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	145.53	400kV MHP - Jigmeling Line - III	299.48	+	
		Unit-IV	155.14	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)	27.02	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	138.17	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	211.92	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	211.92	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	27.51	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	27.96	+	
		-	-	220kV Tsirang - Jigmeling Line	30.67	+	
-	-	132kV Gelephu - Salakati Line	13.52	+			
Total	600.26	Auxiliary Consumption & Transformation Losses at Generator end	0.491%				
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	97.89	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.18	220kV CHP - Birpara Line- II	98.12	+	
		Unit- III	91.50	220kV CHP - Malbase Line- III	150.94	+	
		Unit- IV	91.26	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	42.74	+	
		-	-	66kV CHP - Chumdo Line	11.39	+	
		-	-	66kV CHP - Gedu Line	4.86	+	
		-	-	3x3MVA, 66/11kV TFR	0.71	+	
Total	365.34	Auxiliary Consumption & Transformation Losses at Generator end	0.391%				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	80.84	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	27.40	+	
		Total	24.50	220kV BHP - Tsirang Line	-44.71	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.92	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	5.86	+	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Generator end	2.790%		
6	126MW DHP	Unit-I	51.38	220kV DHP - Tsirang Line	77.90	+	220kV DHP_Dagapela Line on standby.
		Unit-II	27.02	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.88	+	
		-	-	5MVA, 220/33kV TFR	0.49	+	
		Total	78.40	Auxiliary Consumption & Transformation Losses at Generator end	0.013%		
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	-7.70	-	All KHP units under shutdown.
		Unit-II	0.00	132kV KHP - Kilikhar Line	7.28	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.37	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-4.10	-	
		Total	0.00	Auxiliary Consumption & Transformation Losses at Generator end	0.000%		

Note: Generation-Load Summary (MW) for September 28, 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	1,269.09	287.34	282.48	951.08	4.86
2	Eastern Grid	600.26	59.50	56.50	571.43	3.00
	Total	1,869.35	346.84	338.98	1,522.51	7.86

Note: Generation-Load Summary for September 28, 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	1,679.02	180.10	166.24	1,417.71	13.86
2	Eastern Grid	658.72	54.10	50.36	685.83	3.74
	Total	2,337.74	234.20	216.60	2,103.54	17.60

NOTE-BHP & 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.
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