

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	September 29, 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	166.58	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	166.22	400kV THP - Siliguri Line - II	292.28	+	
		Unit- III	167.80	400kV THP - Siliguri Line- IV	279.19	+	
		Unit- IV	127.39	400kV THP - Malbase Line - III	347.67	+	
		Unit- V	128.28	400kV Malbase - Siliguri Line	257.61	+	
		Unit- VI	170.07	-	-	-	
		Total	926.34	Auxiliary Consumption & Transformation Losses at Gen. end	0.777%		
2	720MW MHP	Unit-I	100.18	400kV MHP - Jigmeling Line - I	245.84	+	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 10.26 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	130.21	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	130.86	400kV MHP - Jigmeling Line - III	247.53	+	
		Unit-IV	135.51	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)	51.78	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	107.63	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	163.54	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	163.54	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	27.71	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	28.11	+	
		-	-	220kV Tsirang - Jigmeling Line	6.47	+	
-	-	132kV Gelephu - Salakati Line	19.03	+			
Total	496.76	Auxiliary Consumption & Transformation Losses at Gen. end	0.682%				
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	108.20	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.18	220kV CHP - Birpara Line- II	108.19	+	
		Unit- III	91.50	220kV CHP - Malbase Line- III	125.07	+	
		Unit- IV	91.26	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	80.59	+	
		-	-	66kV CHP - Chumdo Line	16.83	+	
		-	-	66kV CHP - Gedu Line	4.20	+	
		-	-	3x3MVA, 66/11kV TFR	1.31	+	
Total	365.34	Auxiliary Consumption & Transformation Losses at Gen. end	0.422%				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	91.90	+	
		Unit- II	11.90	66kV BHP - Lobeysa Line	29.99	+	
		Total	24.20	220kV BHP - Tsirang Line	-59.82	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	20.00	30MVA ICT, 220/66kV (HV)	7.82	+	
		Total	40.70	Auxiliary Consumption & Transformation Losses at Gen. end	2.974%		
6	126MW DHP	Unit-I	44.33	220kV DHP - Tsirang Line	70.25	+	220kV DHP_Dagapela Line on standby.
		Unit-II	26.37	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.63	+	
		-	-	5MVA, 220/33kV TFR	0.44	+	
		Total	70.70	Auxiliary Consumption & Transformation Losses at Gen. end	0.014%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	55.90	+	
		Unit-II	16.51	132kV KHP - Kilikhar Line	9.00	+	
		Unit- III	16.54	5MVA, 132/11kV TFR	0.38	+	
		Unit- IV	16.53	132kV Motanga - Rangia Line	47.22	+	
		Total	66.08	Auxiliary Consumption & Transformation Losses at Gen. end	1.211%		

Note: Generation-Load Summary (MW) for September 29, 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	1,427.28	294.75	286.70	1,126.06	8.05
2	Eastern Grid	562.84	68.35	64.16	500.96	4.19
	Total	1,990.12	363.10	350.86	1,627.02	12.24

Note: Generation-Load Summary for September 29, 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	1,683.76	190.14	172.42	1,394.84	17.72
2	Eastern Grid	633.50	62.56	58.27	669.72	4.29
	Total	2,317.26	252.70	230.69	2,064.56	22.01

NOTE-BHP, KHP, JLG 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 30, 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	165.74	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	167.14	400kV THP - Siliguri Line - II	269.04	+	
		Unit- III	119.00	400kV THP - Siliguri Line- IV	256.34	+	
		Unit- IV	128.72	400kV THP - Malbase Line - III	296.18	+	
		Unit- V	127.87	400kV Malbase - Siliguri Line	243.99	+	
		Unit- VI	118.94	-	-	-	
		Total	827.41	Auxiliary Consumption & Transformation Losses at Generator end	0.707%		
2	720MW MHP	Unit-I	115.17	400kV MHP - Jigmeling Line - I	251.93	+	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 9.28 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	130.21	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	130.77	400kV MHP - Jigmeling Line - III	253.12	+	
		Unit-IV	130.53	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)	12.46	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	119.26	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	182.84	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	182.84	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	15.29	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	15.46	+	
		-	-	220kV Tsirang - Jigmeling Line	20.75	+	
-	-	132kV Gelephu - Salakati Line	16.82	+			
Total	506.68	Auxiliary Consumption & Transformation Losses at Generator end	0.322%				
3	336MW CHP	Unit- I	91.40	220kV CHP - Birpara Line- I	97.85	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.18	220kV CHP - Birpara Line- II	97.76	+	
		Unit- III	91.50	220kV CHP - Malbase Line- III	150.58	+	
		Unit- IV	91.26	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	42.72	+	
		-	-	66kV CHP - Chumdo Line	10.65	+	
		-	-	66kV CHP - Gedu Line	6.40	+	
		-	-	3x3MVA, 66/11kV TFR	0.73	+	
Total	365.34	Auxiliary Consumption & Transformation Losses at Generator end	0.375%				
4	24MW BHP (U/S)	Unit- I	11.80	220kV BHP - Semtokha Line	81.46	+	
		Unit- II	11.60	66kV BHP - Lobeysa Line	29.20	+	
		Total	23.40	220kV BHP - Tsirang Line	-47.51	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	6.88	+	
		Total	41.80	Auxiliary Consumption & Transformation Losses at Generator end	1.779%		
6	126MW DHP	Unit-I	45.34	220kV DHP - Tsirang Line	70.93	+	220kV DHP_Dagapela Line on standby.
		Unit-II	25.98	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.77	+	
		-	-	5MVA, 220/33kV TFR	0.42	+	
		Total	71.32	Auxiliary Consumption & Transformation Losses at Generator end	-0.042%		
7	60MW KHP	Unit- I	16.53	132kV KHP - Nangkhon Line	60.83	+	
		Unit-II	16.59	132kV KHP - Kilikhar Line	4.46	+	
		Unit- III	16.53	5MVA, 132/11kV TFR	0.29	+	
		Unit- IV	16.56	132kV Motanga - Rangia Line	43.49	+	
		Total	66.21	Auxiliary Consumption & Transformation Losses at Generator end	0.945%		

Note: Generation-Load Summary (MW) for September 30, 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	1,329.27	300.82	294.24	1,007.70	6.58
2	Eastern Grid	572.89	48.39	46.13	545.25	2.26
Total		1,902.16	349.21	340.37	1,552.95	8.84

Note: Generation-Load Summary for September 30, 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	1,678.55	197.02	179.37	1,398.65	17.65
2	Eastern Grid	641.64	50.39	46.88	674.13	3.51
Total		2,320.19	247.41	226.25	2,072.78	21.16

NOTE-BHP, KHP & 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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