

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date: **October 5, 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	166.38	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	118.59	400kV THP - Siliguri Line - II	212.14	+	
		Unit- III	99.49	400kV THP - Siliguri Line- IV	203.05	+	
		Unit- IV	98.27	400kV THP - Malbase Line - III	260.30	+	
		Unit- V	97.94	400kV Malbase - Siliguri Line	186.98	+	
		Unit- VI	99.93	-	-	-	
		Total	680.60	Auxiliary Consumption & Transformation Losses at Gen. end	0.751%		
2	720MW MHP	Unit-I	132.92	400kV MHP - Jigmeling Line - I	202.98	+	Unit-II on standby. 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. 132kV Gelephu_Salakati line under shutdown. (There is MW power difference of 7.92 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	135.74	400kV MHP - Jigmeling Line - III	203.97	+	
		Unit-IV	140.65	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmoo Line - I	0.00		
		-	-	132kV MHP - Yurmoo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	41.80	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	87.99	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	135.80	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	135.80	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	18.50	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	18.70	+	
		-	-	220kV Tsirang - Jigmeling Line	-2.25	-	
-	-	132kV Gelephu - Salakati Line	0.00				
Total	409.31	Auxiliary Consumption & Transformation Losses at Gen. end	0.577%				
3	336MW CHP	Unit- I	91.73	220kV CHP - Birpara Line- I	103.84	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.33	220kV CHP - Birpara Line- II	103.78	+	
		Unit- III	91.58	220kV CHP - Malbase Line- III	134.77	+	
		Unit- IV	91.44	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	65.33	+	
		-	-	66kV CHP - Chumdo Line	18.03	+	
		-	-	66kV CHP - Gedu Line	4.19	+	
		-	-	3x3MVA, 66/11kV TFR	1.40	+	
Total	366.08	Auxiliary Consumption & Transformation Losses at Gen. end	0.019%				
4	24MW BHP (U/S)	Unit- I	11.00	220kV BHP - Semtokha Line	92.60	+	
		Unit- II	10.80	66kV BHP - Lobeysa Line	30.90	+	
		Total	21.80	220kV BHP - Tsirang Line	-64.81	-	
5	40MW BHP (L/S)	Unit- I	19.10	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	19.00	30MVA ICT, 220/66kV (HV)	10.59	+	
		Total	38.10	Auxiliary Consumption & Transformation Losses at Gen. end	0.518%		
6	126MW DHP	Unit-I	37.31	220kV DHP - Tsirang Line	66.86	+	220kV DHP_Dagapela Line on standby.
		Unit-II	29.97	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.60	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		Total	67.28	Auxiliary Consumption & Transformation Losses at Gen. end	0.178%		
7	60MW KHP	Unit- I	16.51	132kV KHP - Nangkhoh Line	38.52	+	
		Unit-II	16.54	132kV KHP - Kilikhar Line	26.44	+	
		Unit- III	16.64	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	16.42	132kV Motanga - Rangia Line	45.97	+	
		Total	66.11	Auxiliary Consumption & Transformation Losses at Gen. end	1.134%		

Note: Generation-Load Summary (MW) for October 05, 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	1,173.86	300.99	297.98	875.12	3.01
2	Eastern Grid	475.42	67.61	64.50	405.56	3.11
	Total	1,649.28	368.60	362.48	1,280.68	6.12

Note: Generation-Load Summary for October 05, 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	1,571.17	204.12	188.53	1,276.44	15.59
2	Eastern Grid	659.30	63.51	60.21	686.40	3.30
	Total	2,230.47	267.63	248.74	1,962.84	18.89

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:	October 6, 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	0.00	400kV THP - Siliguri Line - I	0.00		Unit I & II under emergency shutdown. 400kV THP-Siliguri line I under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	77.15	+	
		Unit- III	68.98	400kV THP - Siliguri Line- IV	72.36	+	
		Unit- IV	70.45	400kV THP - Malbase Line - III	125.13	+	
		Unit- V	69.15	400kV Malbase - Siliguri Line	61.77	+	
		Unit- VI	70.58	-	-	-	
		Total	279.16	Auxiliary Consumption & Transformation Losses at Generator end	1.619%		
2	720MW MHP	Unit-I	134.88	400kV MHP - Jigmeling Line - I	199.42	+	Unit-II on standby. 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. 132kV Gelephu_Salakati line under shutdown. (There is MW power difference of 6.95 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	130.69	400kV MHP - Jigmeling Line - III	200.55	+	
		Unit-IV	135.58	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmoo Line - I	0.00		
		-	-	132kV MHP - Yurmoo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	10.09	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	94.54	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	144.76	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	144.76	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	9.11	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	9.20	+	
		-	-	220kV Tsirang - Jigmeling Line	10.12	+	
-	-	132kV Gelephu - Salakati Line	0.00				
		Total	401.15	Auxiliary Consumption & Transformation Losses at Generator end	0.294%		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	38.08	+	Unit I & II under emergency shutdown. 220kV CHP_SEM line under shutdown.
		Unit- II	0.00	220kV CHP - Birpara Line- II	38.11	+	
		Unit- III	91.22	220kV CHP - Malbase Line- III	90.78	+	
		Unit- IV	91.61	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	-7.95	-	
		-	-	66kV CHP - Chumdo Line	9.96	+	
		-	-	66kV CHP - Gedu Line	4.04	+	
		-	-	3x3MVA, 66/11kV TFR	1.23	+	
		Total	182.83	Auxiliary Consumption & Transformation Losses at Generator end	0.345%		
4	24MW BHP (U/S)	Unit- I	10.80	220kV BHP - Semtokha Line	83.40	+	
		Unit- II	10.70	66kV BHP - Lobeysa Line	27.40	+	
		Total	21.50	220kV BHP - Tsirang Line	-53.14	-	
5	40MW BHP (L/S)	Unit- I	19.10	5MVA, 66/11kV TFR	0.90	+	
		Unit- II	19.20	30MVA ICT, 220/66kV (HV)	8.33	+	
		Total	38.30	Auxiliary Consumption & Transformation Losses at Generator end	2.074%		
6	126MW DHP	Unit-I	36.34	220kV DHP - Tsirang Line	65.88	+	220kV DHP_Dagapela Line on standby.
		Unit-II	29.99	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.65	+	
		-	-	5MVA, 220/33kV TFR	0.44	+	
		Total	66.33	Auxiliary Consumption & Transformation Losses at Generator end	0.015%		
7	60MW KHP	Unit- I	16.56	132kV KHP - Nangkhon Line	43.42	+	
		Unit-II	16.59	132kV KHP - Kilikhar Line	21.92	+	
		Unit- III	16.57	5MVA, 132/11kV TFR	0.31	+	
		Unit- IV	16.54	132kV Motanga - Rangia Line	39.05	+	
		Total	66.26	Auxiliary Consumption & Transformation Losses at Generator end	0.921%		

Note: Generation-Load Summary (MW) for October 06, 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	588.12	298.48	293.73	279.52	4.75
2	Eastern Grid	467.41	54.42	52.63	423.11	1.79
	Total	1,055.53	352.90	346.36	702.63	6.54

Note: Generation-Load Summary for October 06, 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	1,625.55	186.22	170.35	1,362.43	15.87
2	Eastern Grid	659.31	39.18	36.30	697.03	2.88
	Total	2,284.86	225.40	206.65	2,059.46	18.75

NOTE-BHP & 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.
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