

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date: **October 3, 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	146.68	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	166.46	400kV THP - Siliguri Line - II	304.94	+	
		Unit- III	146.25	400kV THP - Siliguri Line- IV	290.35	+	
		Unit- IV	167.46	400kV THP - Malbase Line - III	359.56	+	
		Unit- V	166.20	400kV Malbase - Siliguri Line	271.35	+	
		Unit- VI	168.49	-	-	-	
		Total	961.54	Auxiliary Consumption & Transformation Losses at Gen. end	0.696%		
2	720MW MHP	Unit-I	164.99	400kV MHP - Jigmeling Line - I	246.06	+	Unit-II on standby. 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 8.61 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	165.50	400kV MHP - Jigmeling Line - III	247.42	+	
		Unit-IV	165.22	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)	6.78	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	118.53	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	180.93	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	180.86	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.15	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.42	+	
		-	-	220kV Tsirang - Jigmeling Line	43.03	+	
-	-	132kV Gelephu - Salakati Line	13.00	+			
Total	495.71	Auxiliary Consumption & Transformation Losses at Gen. end	0.450%				
3	336MW CHP	Unit- I	92.18	220kV CHP - Birpara Line- I	105.07	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.46	220kV CHP - Birpara Line- II	105.11	+	
		Unit- III	91.79	220kV CHP - Malbase Line- III	133.20	+	
		Unit- IV	91.46	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	69.40	+	
		-	-	66kV CHP - Chumdo Line	16.67	+	
		-	-	66kV CHP - Gedu Line	4.16	+	
		-	-	3x3MVA, 66/11kV TFR	1.71	+	
Total	366.89	Auxiliary Consumption & Transformation Losses at Gen. end	0.264%				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	96.80	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	31.65	+	
		Total	24.50	220kV BHP - Tsirang Line	-63.66	-	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	8.78	+	
		Total	41.70	Auxiliary Consumption & Transformation Losses at Gen. end	0.785%		
6	126MW DHP	Unit-I	63.60	220kV DHP - Tsirang Line	113.08	+	220kV DHP_Dagapela Line on standby.
		Unit-II	50.06	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.17	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		Total	113.66	Auxiliary Consumption & Transformation Losses at Gen. end	0.246%		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	39.08	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	25.90	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.38	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	43.50	+	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Gen. end	0.970%		

Note: Generation-Load Summary (MW) for October 03, 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	1,508.29	319.04	312.75	1,146.22	6.29
2	Eastern Grid	561.71	67.92	65.05	536.82	2.87
	Total	2,070.00	386.96	377.80	1,683.04	9.16

Note: Generation-Load Summary for October 03, 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	1,479.76	206.67	194.66	1,173.74	12.01
2	Eastern Grid	426.97	73.34	70.05	452.98	3.29
	Total	1,906.73	280.01	264.71	1,626.72	15.30

NOTE-BHP, 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:	October 4, 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	147.15	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	167.40	400kV THP - Siliguri Line - II	279.88	+	
		Unit- III	147.51	400kV THP - Siliguri Line- IV	268.35	+	
		Unit- IV	138.78	400kV THP - Malbase Line - III	312.42	+	
		Unit- V	97.71	400kV Malbase - Siliguri Line	252.64	+	
		Unit- VI	169.04	-	-	-	
		Total	867.59	Auxiliary Consumption & Transformation Losses at Generator end	0.800%		
2	720MW MHP	Unit-I	150.39	400kV MHP - Jigmeling Line - I	228.87	+	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. (There is MW power difference of 10.08 MW between Total MHP generation & outgoing feeder at JLG end)
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	160.77	400kV MHP - Jigmeling Line - III	230.46	+	
		Unit-IV	150.52	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)	1.22	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	111.26	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	169.56	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	169.56	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	12.84	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	12.96	+	
		-	-	220kV Tsirang - Jigmeling Line	27.10	+	
-	-	132kV Gelephu - Salakati Line	10.05	+			
Total	461.68	Auxiliary Consumption & Transformation Losses at Generator end	0.509%				
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	99.34	+	220kV CHP_SEM line under shutdown.
		Unit- II	91.28	220kV CHP - Birpara Line- II	99.04	+	
		Unit- III	91.06	220kV CHP - Malbase Line- III	147.95	+	
		Unit- IV	91.35	220kV CHP - Semtokha Line- IV	0.00		
		-	-	220kV Malbase - Birpara Line	46.44	+	
		-	-	66kV CHP - Chumdo Line	12.60	+	
		-	-	66kV CHP - Gedu Line	4.60	+	
		-	-	3x3MVA, 66/11kV TFR	0.81	+	
		Total	364.96	Auxiliary Consumption & Transformation Losses at Generator end	0.170%		
4	24MW BHP (U/S)	Unit- I	11.90	220kV BHP - Semtokha Line	82.10	+	
		Unit- II	11.70	66kV BHP - Lobeysa Line	28.41	+	
		Total	23.60	220kV BHP - Tsirang Line	-46.75	-	
5	40MW BHP (L/S)	Unit- I	20.60	5MVA, 66/11kV TFR	0.95	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	6.58	+	
		Total	41.70	Auxiliary Consumption & Transformation Losses at Generator end	0.904%		
6	126MW DHP	Unit-I	52.38	220kV DHP - Tsirang Line	75.92	+	220kV DHP_Dagapela Line on standby.
		Unit-II	23.99	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.86	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		Total	76.37	Auxiliary Consumption & Transformation Losses at Generator end	0.196%		
7	60MW KHP	Unit- I	16.52	132kV KHP - Nangkhoh Line	43.48	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	21.79	+	
		Unit- III	16.54	5MVA, 132/11kV TFR	0.34	+	
		Unit- IV	16.61	132kV Motanga - Rangia Line	34.69	+	
		Total	66.17	Auxiliary Consumption & Transformation Losses at Generator end	0.846%		

Note: Generation-Load Summary (MW) for October 04, 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	1,374.22	301.43	294.99	1,045.69	6.44
2	Eastern Grid	527.85	59.83	56.92	495.12	2.91
	Total	1,902.07	361.26	351.91	1,540.81	9.35

Note: Generation-Load Summary for October 04, 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	1,487.13	185.78	172.98	1,223.35	12.80
2	Eastern Grid	512.12	48.42	44.99	541.70	3.43
	Total	1,999.25	234.20	217.97	1,765.05	16.23

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.
- ii) The clocks of all the locations are not synchronized.

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