

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: October 15, 2022
Hours: 19:00 Hours

Date: 30-Aug-22
Time: 19:23 hrs
Load(MW): 536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.08	400kV THP - Siliguri Line - I	195.78	
		Unit- II	185.39	400kV THP - Siliguri Line - II	194.06	
		Unit- III	69.41	400kV THP - Siliguri Line- IV	189.91	
		Unit- IV	79.54	400kV THP - Malbase Line - III	253.91	
		Unit- V	136.39	400kV Malbase - Siliguri Line	174.90	
		Unit- VI	185.99	-	-	
		Total	841.80	Auxiliary Consumption & Transformation Losses at Generator end	0.97%	
2	720MW MHP	Unit-I	90.23	400kV MHP - Jigmeling Line - I	180.87	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	110.23	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	90.59	400kV MHP - Jigmeling Line - III	181.94	
		Unit-IV	150.20	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	75.23	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	14.99	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	86.24	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	129.82	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	128.80	
		-	-	80MVA, 220/132kV ICT - I (HV)	19.70	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.08	
		-	-	220kV Tsirang - Jigmeling Line	-16.67	
-	-	132kV Gelephu - Salakati Line	22.56			
Total	441.25	Auxiliary Consumption & Transformation Losses at Generator end	0.73%			
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	70.95	
		Unit- II	91.18	220kV CHP - Birpara Line- II	70.88	
		Unit- III	91.63	220kV CHP - Malbase Line- III	105.14	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	88.46	
		-	-	220kV Malbase - Birpara Line	33.85	
		-	-	66kV CHP - Chumdo Line	1.06	
		-	-	66kV CHP - Gedu Line	11.76	
		-	-	3x3MVA, 66/11kV TFR	1.68	
Total	349.34	Auxiliary Consumption & Transformation Losses at Generator end	-0.17%			
4	24MW BHP (U/S)	Unit- I	10.70	220kV BHP - Semtokha Line	44.30	
		Unit- II	10.30	66kV BHP - Lobeysa Line	27.90	
		Total	21.00	220kV BHP - Tsirang Line	-14.04	
5	40MW BHP (L/S)	Unit- I	18.90	5MVA, 66/11kV TFR	0.55	
		Unit- II	19.30	30MVA ICT, 220/66kV (HV)	7.92	
		Total	38.20	Auxiliary Consumption & Transformation Losses at Generator end	0.83%	
6	126MW DHP	Unit-I	37.36	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	37.03	220kV DHP - Dagapela Line	73.96	
		-	-	220kV Jigmeling - Dagapela Line	-42.75	
		-	-	5MVA, 220/33kV TFR	0.42	
Total	74.39	Auxiliary Consumption & Transformation Losses at Gen. end	0.01%			
7	60MW KHP	Unit- I	16.63	132kV KHP - Nangkhor Line	36.77	
		Unit-II	16.49	132kV KHP - Kilikhar Line	28.08	
		Unit- III	16.49	5MVA, 132/11kV TFR	0.60	
		Unit- IV	16.59	132kV Motanga - Rangia Line	50.57	
		Total	66.20	Auxiliary Consumption & Transformation Losses at Generator end	1.13%	

Note: Generation-Load Summary (MW) for October 15, 2022 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)
1	Western Grid	1,324.73	368.32	360.27	930.33	8.05
2	Eastern Grid	507.45	115.54	111.58	417.99	3.96
Total		1,832.18	483.86	471.85	1,348.32	12.01

Note: Generation-Load Summary for October 15, 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)
1	Western Grid	886.00	297.02	292.85	553.61	4.17
2	Eastern Grid	373.06	74.05	71.40	334.38	2.65
Total		1,259.06	371.07	364.25	887.99	6.82

NOTE-MAT data collected from site.

1. The Instantaneous load balance,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

Coincidental Maximum Load

Date: October 16, 2022
Hours: 09:00 Hours

Date: 30-Aug-22 **Time:** 19:23 hrs **Load(MW):** 536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.17	400kV THP - Siliguri Line - I	200.69	
		Unit- II	186.45	400kV THP - Siliguri Line - II	198.57	
		Unit- III	68.68	400kV THP - Siliguri Line - IV	194.05	
		Unit- IV	79.54	400kV THP - Malbase Line - III	240.52	
		Unit- V	136.61	400kV Malbase - Siliguri Line	183.16	
		Unit- VI	185.37	-	-	
		Total	841.82	Auxiliary Consumption & Transformation Losses at Generator end	0.95%	
2	720MW MHP	Unit-I	90.12	400kV MHP - Jigmeling Line - I	183.94	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	100.13	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	90.55	400kV MHP - Jigmeling Line - III	185.16	
		Unit-IV	150.13	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	59.54	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-7.89	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	92.85	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	139.78	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	140.51	
		-	-	80MVA, 220/132kV ICT - I (HV)	13.84	
		-	-	80MVA, 220/132kV ICT - II (HV)	14.09	
		-	-	220kV Tsirang - Jigmeling Line	-5.50	
-	-	132kV Gelephu - Salakati Line	21.16			
Total	430.93	Auxiliary Consumption & Transformation Losses at Generator end	0.53%			
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	66.80	
		Unit- II	91.18	220kV CHP - Birpara Line- II	66.28	
		Unit- III	91.63	220kV CHP - Malbase Line- III	119.43	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	84.37	
		-	-	220kV Malbase - Birpara Line	17.18	
		-	-	66kV CHP - Chumdo Line	0.43	
		-	-	66kV CHP - Gedu Line	10.78	
		-	-	3x3MVA, 66/11kV TFR	1.05	
Total	349.34	Auxiliary Consumption & Transformation Losses at Generator end	0.06%			
4	24MW BHP (U/S)	Unit- I	10.10	220kV BHP - Semtokha Line	34.26	
		Unit- II	10.40	66kV BHP - Lobeyssa Line	25.16	
		Total	20.50	220kV BHP - Tsirang Line	-3.71	
5	40MW BHP (L/S)	Unit- I	18.10	5MVA, 66/11kV TFR	0.39	
		Unit- II	18.10	30MVA ICT, 220/66kV (HV)	5.36	
		Total	36.20	Auxiliary Consumption & Transformation Losses at Generator end	1.06%	
6	126MW DHP	Unit-I	36.36	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	37.02	220kV DHP - Dagapela Line	72.96	
		-	-	220kV Jigmeling - Dagapela Line	-41.45	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	73.38	Auxiliary Consumption & Transformation Losses at Generator end	0.30%			
7	60MW KHP	Unit- I	16.69	132kV KHP - Nangkhoh Line	42.46	
		Unit-II	16.52	132kV KHP - Kilikhar Line	22.63	
		Unit- III	16.59	5MVA, 132/11kV TFR	0.50	
		Unit- IV	16.59	132kV Motanga - Rangia Line	45.20	
		Total	66.39	Auxiliary Consumption & Transformation Losses at Generator end	1.21%	

Note: Generation-Load Summary (MW) for October 16, 2022 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)
1	Western Grid	1,321.24	358.56	349.55	926.73	9.01
2	Eastern Grid	497.32	93.77	90.68	439.50	3.09
Total		1,818.56	452.33	440.23	1,366.23	12.10

Note: Generation-Load Summary for October 16, 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)
1	Western Grid	885.07	296.52	292.21	544.49	4.31
2	Eastern Grid	379.96	60.61	59.07	363.41	1.54
Total		1,265.03	357.13	351.28	907.90	5.85

Note: MAT data collected from site.

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- 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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