

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: September 27, 2022
Hours: 19:00 Hours

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

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	184.71	400kV THP - Siliguri Line - I	220.43	
		Unit- II	185.52	400kV THP - Siliguri Line - II	218.70	
		Unit- III	109.49	400kV THP - Siliguri Line- IV	213.73	
		Unit- IV	79.35	400kV THP - Malbase Line - III	267.98	
		Unit- V	184.75	400kV Malbase - Siliguri Line	198.95	
		Unit- VI	184.93	-	-	
		Total	928.75	Auxiliary Consumption & Transformation Losses at Generator end	0.85%	
2	720MW MHP	Unit-I	140.19	400kV MHP - Jigmeling Line - I	234.00	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	140.13	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.44	400kV MHP - Jigmeling Line - III	235.00	
		Unit-IV	140.51	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	87.21	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	37.33	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	105.49	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	157.25	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	158.28	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.30	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.66	
		-	-	220kV Tsirang - Jigmeling Line	-8.50	
-	-	132kV Gelephu - Salakati Line	19.40			
Total	556.27	Auxiliary Consumption & Transformation Losses at Generator end	0.01%			
3	336MW CHP	Unit- I	91.78	220kV CHP - Birpara Line- I	81.39	
		Unit- II	92.17	220kV CHP - Birpara Line- II	81.32	
		Unit- III	92.15	220kV CHP - Malbase Line- III	95.60	
		Unit- IV	76.10	220kV CHP - Semtokha Line- IV	67.20	
		-	-	220kV Malbase - Birpara Line	61.69	
		-	-	66kV CHP - Chumdo Line	16.60	
		-	-	66kV CHP - Gedu Line	5.30	
		-	-	3x3MVA, 66/11kV TFR	0.79	
Total	352.20	Auxiliary Consumption & Transformation Losses at Generator end	1.14%			
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	41.30	
		Unit- II	12.10	66kV BHP - Lobeyasa Line	27.02	
		Total	24.50	220kV BHP - Tsirang Line	-3.40	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.63	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	3.76	
		Total	41.60	Auxiliary Consumption & Transformation Losses at Generator end	0.83%	
6	126MW DHP	Unit-I	36.34	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	36.04	220kV DHP - Dagapela Line	71.93	
		-	-	220kV Jigmeling - Dagapela Line	-9.52	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	72.38	Auxiliary Consumption & Transformation Losses at Gen. end	0.35%			
7	60MW KHP	Unit- I	16.48	132kV KHP - Nangkhoh Line	23.48	Unit-III tripped due to excitation problem.
		Unit-II	16.62	132kV KHP - Kilikhar Line	24.88	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.70	
		Unit- IV	16.51	132kV Motanga - Rangia Line	48.40	
		Total	49.61	Auxiliary Consumption & Transformation Losses at Generator end	1.11%	

Note: Generation-Load Summary (MW) for September 27, 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	1,419.43	342.20	329.49	1,076.21	12.71
2	Eastern Grid	605.88	118.08	117.47	488.82	0.61
Total		2,025.31	460.28	446.96	1,565.03	13.32

Note: Generation-Load Summary 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)
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- All WDC 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: September 28, 2022
Hours: 09:00 Hours

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

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.64	400kV THP - Siliguri Line - I	225.83	
		Unit- II	185.89	400kV THP - Siliguri Line - II	224.32	
		Unit- III	108.97	400kV THP - Siliguri Line - IV	217.47	
		Unit- IV	79.25	400kV THP - Malbase Line - III	258.67	
		Unit- V	185.14	400kV Malbase - Siliguri Line	207.49	
		Unit- VI	184.97	-	-	
		Total	929.86	Auxiliary Consumption & Transformation Losses at Generator end	0.38%	
2	720MW MHP	Unit-I	150.18	400kV MHP - Jigmeling Line - I	257.15	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	150.06	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.43	400kV MHP - Jigmeling Line - III	258.80	
		Unit-IV	150.63	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	66.18	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	17.92	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	123.04	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	184.54	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	185.48	
		-	-	80MVA, 220/132kV ICT - I (HV)	10.32	
		-	-	80MVA, 220/132kV ICT - II (HV)	10.55	
		-	-	220kV Tsirang - Jigmeling Line	-8.50	
-	-	132kV Gelephu - Salakati Line	15.01			
Total	586.30	Auxiliary Consumption & Transformation Losses at Generator end	0.71%			
3	336MW CHP	Unit- I	91.26	220kV CHP - Birpara Line- I	74.35	
		Unit- II	91.14	220kV CHP - Birpara Line- II	74.29	
		Unit- III	91.43	220kV CHP - Malbase Line- III	128.58	
		Unit- IV	75.51	220kV CHP - Semtokha Line- IV	51.51	
		-	-	220kV Malbase - Birpara Line	22.04	
		-	-	66kV CHP - Chumdo Line	12.59	
		-	-	66kV CHP - Gedu Line	6.04	
		-	-	3x3MVA, 66/11kV TFR	0.84	
Total	349.34	Auxiliary Consumption & Transformation Losses at Generator end	0.33%			
4	24MW BHP (U/S)	Unit- I	11.80	220kV BHP - Semtokha Line	41.30	
		Unit- II	11.50	66kV BHP - Lobeyssa Line	24.20	
		Total	23.30	220kV BHP - Tsirang Line	-1.50	
5	40MW BHP (L/S)	Unit- I	20.40	5MVA, 66/11kV TFR	0.39	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	1.74	
		Total	41.50	Auxiliary Consumption & Transformation Losses at Generator end	0.63%	
6	126MW DHP	Unit-I	40.83	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	40.52	220kV DHP - Dagapela Line	80.90	
		-	-	220kV Jigmeling - Dagapela Line	-6.55	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	81.35	Auxiliary Consumption & Transformation Losses at Generator end	0.31%			
7	60MW KHP	Unit- I	16.60	132kV KHP - Nangkhoh Line	42.46	
		Unit-II	16.56	132kV KHP - Kilikhar Line	22.76	
		Unit- III	16.62	5MVA, 132/11kV TFR	0.40	
		Unit- IV	16.66	132kV Motanga - Rangia Line	48.18	
		Total	66.44	Auxiliary Consumption & Transformation Losses at Generator end	1.23%	

Note: Generation-Load Summary (MW) for September 28, 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	1,425.35	381.51	376.14	1,045.79	5.37
2	Eastern Grid	652.74	94.54	89.55	556.25	4.99
Total		2,078.09	476.05	465.69	1,602.04	10.36

Note: Generation-Load Summary 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)
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

Notes: All WDC & 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.
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