

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: November 15, 2022
Hours: 18:00 Hours

Date	Time	Load(MW)
7-Nov-22	18:11hrs	609.06

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Line - I	0.00	Unit-I & II under Shutdown. Unit-IV on Standby. 400kV Tala-Malbase line under Shutdown. 400kV THP - Siliguri Line- I on Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	195.51	
		Unit- III	108.29	400kV THP - Siliguri Line- IV	187.30	
		Unit- IV	0.00	400kV THP - Malbase Line - III	0.00	
		Unit- V	137.18	400kV Malbase - Siliguri Line	-82.96	
		Unit- VI	139.22	-	-	
		Total	384.69	Auxiliary Consumption & Transformation Losses at Generator end	0.49%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00	Unit-I on standby. Unit-III under shutdown. 400kV MHP-JLG Line I, II & IV on Standby. 132kV MHP_Yurmoo line I not in service. 400kV JLG_ALI Direct line II Standby. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	105.16	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	127.29	
		Unit-IV	110.13	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	86.61	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	101.02	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	9.57	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	14.71	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	11.44	
		-	-	80MVA, 220/132kV ICT - II (HV)	11.66	
		-	-	220kV Tsirang - Jigmeling Line	-15.60	
-	-	132kV Gelephu - Salakati Line	2.49			
Total	215.29	Auxiliary Consumption & Transformation Losses at Generator end	0.65%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	5.62	Unit-I under Shutdown.
		Unit- II	65.46	220kV CHP - Birpara Line- II	5.66	
		Unit- III	66.84	220kV CHP - Malbase Line- III	61.95	
		Unit- IV	49.97	220kV CHP - Semtokha Line- IV	77.90	
		-	-	220kV Malbase - Birpara Line	-38.95	
		-	-	66kV CHP - Chumdo Line	22.68	
		-	-	66kV CHP - Gedu Line	6.24	
		-	-	3x3MVA, 66/11kV TFR	1.71	
Total	182.27	Auxiliary Consumption & Transformation Losses at Generator end	0.28%			
4	24MW BHP (U/S)	Unit- I	6.30	220kV BHP - Semtokha Line	61.85	
		Unit- II	6.10	66kV BHP - Lobeyasa Line	27.96	
		Total	12.40	220kV BHP - Tsirang Line	-52.58	
5	40MW BHP (L/S)	Unit- I	12.80	5MVA, 66/11kV TFR	0.72	
		Unit- II	12.70	30MVA ICT, 220/66kV (HV)	16.50	
		Total	25.50	Auxiliary Consumption & Transformation Losses at Generator end	-0.13%	
6	126MW DHP	Unit-I	42.88	220kV DHP - Tsirang Line	42.65	
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	62.70	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	42.88	Auxiliary Consumption & Transformation Losses at Gen. end	0.07%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	18.72	Unit I on Standby.
		Unit-II	13.15	132kV KHP - Kilikhar Line	19.77	
		Unit- III	13.17	5MVA, 132/11kV TFR	0.50	
		Unit- IV	13.16	132kV Motanga - Rangia Line	17.29	
		Total	39.48	Auxiliary Consumption & Transformation Losses at Generator end	1.24%	

Note: Generation-Load Summary (MW) for November 15, 2022 at 18:00hrs.

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	647.74	391.16	388.79	272.18	2.37
2	Eastern Grid	254.77	195.11	193.23	44.06	1.88
Total		902.51	586.27	582.02	316.24	4.25

Note: Generation-Load Summary for November 15, 2021 at 18:00hrs.

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	818.99	349.29	349.06	468.90	0.23
2	Eastern Grid	265.66	89.19	86.72	177.27	2.47
Total		1,084.65	438.48	435.78	646.17	2.70

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: November 16, 2022
Hours: 09:00 Hours

Date	Time	Load(MW)
7-Nov-22	18:11hrs	609.06

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Line - I	0.00	Unit-I & II under Shutdown. Unit-IV on Standby. 400kV Tala-Malbase line under Shutdown. 400kV THP - Siliguri Line- I on Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	178.95	
		Unit- III	79.15	400kV THP - Siliguri Line- IV	173.84	
		Unit- IV	0.00	400kV THP - Malbase Line - III	0.00	
		Unit- V	137.16	400kV Malbase - Siliguri Line	-56.42	
		Unit- VI	139.04	-	-	
		Total	355.35	Auxiliary Consumption & Transformation Losses at Generator end	0.72%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00	Unit-I on standby. Unit-III under shutdown. 400kV MHP-JLG Line I, II & IV on Standby. 132kV MHP_Yurmoo line I not in service. 400kV JLG_ALI Direct line II Standby. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	114.77	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	143.34	
		Unit-IV	110.12	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	79.76	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	84.23	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	22.78	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	40.22	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	8.11	
		-	-	80MVA, 220/132kV ICT - II (HV)	8.34	
		-	-	220kV Tsirang - Jigmeling Line	-6.80	
-	-	132kV Gelephu - Salakati Line	1.20			
Total	224.89	Auxiliary Consumption & Transformation Losses at Generator end	0.80%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	9.33	Unit-I under shutdown.
		Unit- II	64.14	220kV CHP - Birpara Line- II	8.97	
		Unit- III	68.93	220kV CHP - Malbase Line- III	69.02	
		Unit- IV	49.80	220kV CHP - Semtokha Line- IV	68.33	
		-	-	220kV Malbase - Birpara Line	-37.76	
		-	-	66kV CHP - Chumdo Line	18.54	
		-	-	66kV CHP - Gedu Line	6.41	
		-	-	3x3MVA, 66/11kV TFR	1.06	
		Total	182.87	Auxiliary Consumption & Transformation Losses at Generator end	0.66%	
4	24MW BHP (U/S)	Unit- I	6.30	220kV BHP - Semtokha Line	56.23	
		Unit- II	6.00	66kV BHP - Lobeyasa Line	24.39	
		Total	12.30	220kV BHP - Tsirang Line	-44.69	
5	40MW BHP (L/S)	Unit- I	12.20	5MVA, 66/11kV TFR	0.44	
		Unit- II	12.20	30MVA ICT, 220/66kV (HV)	12.85	
		Total	24.40	Auxiliary Consumption & Transformation Losses at Generator end	0.90%	
6	126MW DHP	Unit-I	41.36	220kV DHP - Tsirang Line	41.13	Unit-II on Standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	61.51	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	41.36	Auxiliary Consumption & Transformation Losses at Generator end	0.07%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	20.36	Unit I under standby.
		Unit-II	12.64	132kV KHP - Kilikhar Line	16.83	
		Unit- III	12.64	5MVA, 132/11kV TFR	0.48	
		Unit- IV	12.65	132kV Motanga - Rangia Line	11.84	
		Total	37.93	Auxiliary Consumption & Transformation Losses at Generator end	0.68%	

Note: Generation-Load Summary (MW) for November 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	616.28	346.17	342.04	276.91	4.13
2	Eastern Grid	262.82	179.98	177.93	76.04	2.05
Total		879.10	526.15	519.97	352.95	6.18

Note: Generation-Load Summary for November 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	795.07	338.21	344.39	445.35	-6.18
2	Eastern Grid	247.71	75.76	73.50	183.46	2.26
Total		1,042.78	413.97	417.89	628.81	-3.92

NOTE-Eastern 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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