

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	May 30, 2022
Hours:	19:00 Hours

Date	Time	Load(MW)
12-Jan-22	18:00hrs	492.25

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	98.64	400kV THP - Siliguri Line - I	0.00	Unit- II, III & VI on standby. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	132.81	
		Unit- IV	139.58	400kV THP - Malbase Line - III	220.06	
		Unit- V	118.65	400kV Malbase - Siliguri Line	115.18	
		Unit- VI	0.00	-	-	
		Total	356.87	Auxiliary Consumption & Transformation Losses at Generator end	1.12%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00	Unit- IV & I on standby 400kV MHP-JLG Line I & II under Shutdown. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	150.75	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	118.32	400kV MHP - Jigmeling Line - III	135.23	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	133.76	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	101.67	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	61.57	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	93.81	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	27.35	
		-	-	80MVA, 220/132kV ICT - II (HV)	27.88	
		-	-	220kV Tsirang - Jigmeling Line	-23.36	
-	-	132kV Gelephu - Salakati Line	0.65			
Total	269.07	Auxiliary Consumption & Transformation Losses at Generator end	0.03%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	26.30	Unit-I on standby.
		Unit- II	63.01	220kV CHP - Birpara Line- II	26.38	
		Unit-III	65.13	220kV CHP - Malbase Line- III	52.93	
		Unit- IV	62.68	220kV CHP - Semtokha Line- IV	64.47	
		-	-	220kV Malbase - Birpara Line	2.07	
		-	-	66kV CHP - Chumdo Line	14.91	
		-	-	66kV CHP - Gedu Line	3.75	
		-	-	3x3MVA, 66/11kV TFR	1.21	
Total	190.82	Auxiliary Consumption & Transformation Losses at Generator end	0.46%			
4	24MW BHP (U/S)	Unit- I	7.70	220kV BHP - Semtokha Line	42.10	L/S Unit-I & U/S Unit-II on standby
		Unit- II	0.00	66kV BHP - Lobeyasa Line	21.00	
		Total	7.70	220kV BHP - Tsirang Line	-41.16	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.67	L/S Unit-I & U/S Unit-II on standby
		Unit- II	14.90	30MVA ICT, 220/66kV (HV)	14.08	
		Total	14.90	Auxiliary Consumption & Transformation Losses at Generator end	-0.04%	
6	126MW DHP	Unit-I	21.22	220kV DHP - Tsirang Line	21.00	Unit-II on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	22.56	
		-	-	5MVA, 220/33kV TFR	-	
Total	21.22	Auxiliary Consumption & Transformation Losses at Gen. end	1.04%			
7	60MW KHP	Unit- I	12.29	132kV KHP - Nangkhoh Line	31.69	
		Unit-II	12.30	132kV KHP - Kilikhar Line	19.17	
		Unit- III	15.03	5MVA, 132/11kV TFR	0.50	
		Unit- IV	12.29	132kV Motanga - Rangia Line	33.94	
		Total	51.91	Auxiliary Consumption & Transformation Losses at Generator end	1.06%	

Note: Generation-Load Summary (MW) for May 30, 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	591.51	312.13	307.05	302.74	5.08
2	Eastern Grid	320.98	107.65	107.02	189.97	0.63
Total		912.49	419.78	414.07	492.71	5.71

Note: Generation-Load Summary for May 30, 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	1,249.87	220.65	202.22	975.20	18.43
2	Eastern Grid	506.14	77.63	74.33	482.53	3.30
Total		1,756.01	298.28	276.55	1,457.73	21.73

NOTE- BHP 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:	May 31, 2022
Hours:	09:00 Hours

Date	Time	Load(MW)
12-Jan-22	18:00hrs	492.25

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	97.67	400kV THP - Siliguri Line - I	0.00	Unit- II, III & VI on standby. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	138.17	
		Unit- IV	139.52	400kV THP - Malbase Line - III	215.61	
		Unit- V	118.55	400kV Malbase - Siliguri Line	123.29	
		Unit- VI	0.00	-	-	
		Total	355.74	Auxiliary Consumption & Transformation Losses at Generator end	0.55%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00	Unit- I & IV on standby. 400kV MHP-JLG Line I & II under shutdown. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	149.80	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	125.38	400kV MHP - Jigmeling Line - III	137.42	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	136.35	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	73.83	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	78.27	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	118.89	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	25.56	
		-	-	80MVA, 220/132kV ICT - II (HV)	25.99	
		-	-	220kV Tsirang - Jigmeling Line	-3.82	
-	-	132kV Gelephu - Salakati Line	6.08			
Total	275.18	Auxiliary Consumption & Transformation Losses at Generator end	0.51%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	27.84	Unit-I on standby
		Unit- II	57.69	220kV CHP - Birpara Line- II	27.90	
		Unit- III	65.07	220kV CHP - Malbase Line- III	57.63	
		Unit- IV	63.43	220kV CHP - Semtokha Line- IV	55.67	
		-	-	220kV Malbase - Birpara Line	0.97	
		-	-	66kV CHP - Chumdo Line	12.24	
		-	-	66kV CHP - Gedu Line	4.05	
		-	-	3x3MVA, 66/11kV TFR	0.60	
Total	186.19	Auxiliary Consumption & Transformation Losses at Generator end	0.14%			
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	43.60	
		Unit- II	12.90	66kV BHP - Lobeysa Line	21.12	
		Total	25.30	220kV BHP - Tsirang Line	-26.73	
5	40MW BHP (L/S)	Unit- I	6.80	5MVA, 66/11kV TFR	0.39	
		Unit- II	6.50	30MVA ICT, 220/66kV (HV)	8.57	
		Total	13.30	Auxiliary Consumption & Transformation Losses at Generator end	0.57%	
6	126MW DHP	Unit-I	27.75	220kV DHP - Tsirang Line	27.54	Unit-II on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	21.71	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	27.75	Auxiliary Consumption & Transformation Losses at Generator end	0.04%			
7	60MW KHP	Unit- I	16.44	132kV KHP - Nangkhoh Line	43.99	
		Unit-II	16.44	132kV KHP - Kilikhar Line	20.84	
		Unit- III	16.38	5MVA, 132/11kV TFR	0.50	
		Unit- IV	16.57	132kV Motanga - Rangia Line	48.65	
		Total	65.83	Auxiliary Consumption & Transformation Losses at Generator end	0.76%	

Note: Generation-Load Summary (MW) for May 31, 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	608.28	293.93	291.48	318.17	2.45
2	Eastern Grid	341.01	85.30	83.39	251.89	1.91
Total		949.29	379.23	374.87	570.06	4.36

Note: Generation-Load Summary for May 31, 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	1,145.11	217.66	209.31	894.31	8.35
2	Eastern Grid	551.19	82.20	79.08	502.13	3.12
Total		1,696.30	299.86	288.39	1,396.44	11.47

NOTE-BHP, THP and CHP 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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