

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	June 12, 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	146.94	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I & II under breakdown.
		Unit- II	98.57	400kV THP - Siliguri Line - II	0.00	
		Unit- III	78.79	400kV THP - Siliguri Line- IV	307.10	
		Unit- IV	89.37	400kV THP - Malbase Line - III	301.74	
		Unit- V	118.15	400kV Malbase - Siliguri Line	302.92	
		Unit- VI	80.43	-	-	
		Total	612.25	Auxiliary Consumption & Transformation Losses at Generator end	0.56%	
2	720MW MHP	Unit-I	140.10	400kV MHP - Jigmeling Line - I	208.50	Unit III under shutdown 400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby.
		Unit-II	140.20	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	210.00	
		Unit-IV	140.40	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)	46.80	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	93.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	139.90	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	138.60	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.50	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.30	
		-	-	220kV Tsirang - Jigmeling Line	30.60	
-	-	132kV Gelephu - Salakati Line	6.30			
Total	420.70	Auxiliary Consumption & Transformation Losses at Generator end	0.52%			
3	336MW CHP	Unit- I	78.70	220kV CHP - Birpara Line- I	52.67	
		Unit- II	75.56	220kV CHP - Birpara Line- II	52.67	
		Unit- III	74.45	220kV CHP - Malbase Line- III	120.13	
		Unit- IV	78.78	220kV CHP - Semtokha Line- IV	61.10	
		-	-	220kV Malbase - Birpara Line	-7.42	
		-	-	66kV CHP - Chumdo Line	14.57	
		-	-	66kV CHP - Gedu Line	4.27	
		-	-	3x3MVA, 66/11kV TFR	1.54	
Total	307.49	Auxiliary Consumption & Transformation Losses at Generator end	0.18%			
4	24MW BHP (U/S)	Unit- I	9.90	220kV BHP - Semtokha Line	42.19	
		Unit- II	9.60	66kV BHP - Lobeyasa Line	24.46	
		Total	19.50	220kV BHP - Tsirang Line	-12.37	
5	40MW BHP (L/S)	Unit- I	17.90	5MVA, 66/11kV TFR	0.58	
		Unit- II	17.90	30MVA ICT, 220/66kV (HV)	6.01	
		Total	35.80	Auxiliary Consumption & Transformation Losses at Generator end	0.80%	
6	126MW DHP	Unit-I	46.33	220kV DHP - Tsirang Line	46.10	220kV DHP_Dagapela Line on Standby. Unit-II on standby
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	31.20	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	46.33	Auxiliary Consumption & Transformation Losses at Gen. end	0.06%			
7	60MW KHP	Unit- I	16.30	132kV KHP - Nangkhoh Line	42.20	
		Unit-II	16.50	132kV KHP - Kilikhar Line	22.60	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.40	
		Unit- IV	16.70	132kV Motanga - Rangia Line	43.60	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Generator end	1.21%	

Note: Generation-Load Summary (MW) for June 12, 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	1,021.37	282.83	278.41	707.94	4.42
2	Eastern Grid	486.70	95.90	92.90	421.40	3.00
Total		1,508.07	378.73	371.31	1,129.34	7.42

Note: Generation-Load Summary for June 12, 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	1,585.95	253.94	236.94	1,169.71	17.00
2	Eastern Grid	658.94	78.62	74.78	742.62	3.84
Total		2,244.89	332.56	311.72	1,912.33	20.84

NOTE- BHP Generation 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:	June 13, 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	147.73	400kV THP - Siliguri Line - I	0.00	Unit IV on Standby. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	68.35	400kV THP - Siliguri Line - II	0.00	
		Unit- III	78.79	400kV THP - Siliguri Line- IV	257.89	
		Unit- IV	0.00	400kV THP - Malbase Line - III	253.79	
		Unit- V	139.77	400kV Malbase - Siliguri Line	255.90	
		Unit- VI	80.64	-	-	
		Total	515.28	Auxiliary Consumption & Transformation Losses at Generator end	0.70%	
2	720MW MHP	Unit-I	135.18	400kV MHP - Jigmeling Line - I	201.16	Unit III under shutdown 400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby.
		Unit-II	135.17	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	202.56	
		Unit-IV	135.51	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)	33.77	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	90.78	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	138.03	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	136.98	
		-	-	80MVA, 220/132kV ICT - I (HV)	10.67	
		-	-	80MVA, 220/132kV ICT - II (HV)	10.79	
		-	-	220kV Tsirang - Jigmeling Line	17.49	
-	-	132kV Gelephu - Salakati Line	-5.80			
Total	405.86	Auxiliary Consumption & Transformation Losses at Generator end	0.53%			
3	336MW CHP	Unit- I	68.37	220kV CHP - Birpara Line- I	43.79	
		Unit- II	67.39	220kV CHP - Birpara Line- II	43.77	
		Unit- III	75.39	220kV CHP - Malbase Line- III	121.30	
		Unit- IV	66.15	220kV CHP - Semtokha Line- IV	50.33	
		-	-	220kV Malbase - Birpara Line	-23.13	
		-	-	66kV CHP - Chumdo Line	12.02	
		-	-	66kV CHP - Gedu Line	4.49	
		-	-	3x3MVA, 66/11kV TFR	0.73	
Total	277.30	Auxiliary Consumption & Transformation Losses at Generator end	0.31%			
4	24MW BHP (U/S)	Unit- I	9.00	220kV BHP - Semtokha Line	44.20	
		Unit- II	8.60	66kV BHP - Lobeyasa Line	22.97	
		Total	17.60	220kV BHP - Tsirang Line	-22.04	
5	40MW BHP (L/S)	Unit- I	14.20	5MVA, 66/11kV TFR	0.37	
		Unit- II	14.10	30MVA ICT, 220/66kV (HV)	5.40	
		Total	28.30	Auxiliary Consumption & Transformation Losses at Generator end	0.87%	
6	126MW DHP	Unit-I	41.34	220kV DHP - Tsirang Line	41.10	220kV DHP_Dagapela Line on Standby. Unit-II on standby
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	30.15	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	41.34	Auxiliary Consumption & Transformation Losses at Generator end	0.10%			
7	60MW KHP	Unit- I	16.16	132kV KHP - Nangkhoh Line	44.87	
		Unit-II	16.49	132kV KHP - Kilikhar Line	19.90	
		Unit- III	16.49	5MVA, 132/11kV TFR	0.34	
		Unit- IV	16.50	132kV Motanga - Rangia Line	31.98	
		Total	65.64	Auxiliary Consumption & Transformation Losses at Generator end	0.80%	

Note: Generation-Load Summary (MW) for June 13, 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	879.82	284.11	279.20	578.22	4.91
2	Eastern Grid	471.50	97.02	94.35	391.97	2.67
Total		1,351.32	381.13	373.55	970.19	7.58

Note: Generation-Load Summary for June 13, 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	1,681.18	255.70	238.43	1,261.59	17.27
2	Eastern Grid	658.78	73.73	69.29	748.94	4.44
Total		2,339.96	329.43	307.72	2,010.53	21.71

NOTE- BHP & all 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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