

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	January 8, 2022
Hours:	18:00 Hours

Date	Time	Load(MW)
30-Dec-21	18:00hrs	487.76

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	THP under total shutdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line - IV	0.00	
		Unit- IV	0.00	400kV THP - Malbase Line - III	0.00	
		Unit- V	0.00	400kV Malbase - Siliguri Line	-68.63	
		Unit- VI	0.00	-	-	
		Total	0.00	Auxiliary Consumption & Transformation Losses at Generator end	0.00%	
2	720MW MHP	Unit-I	85.32	400kV MHP - Jigmeling Line - I	244.74	Unit-II on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line I (Interim) under Shutdown. 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	161.67	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	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)	112.04	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	50.18	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	78.44	
		-	-	80MVA, 220/132kV ICT - I (HV)	24.18	
		-	-	80MVA, 220/132kV ICT - II (HV)	24.56	
		-	-	220kV Tsirang - Jigmeling Line	-45.94	
-	-	132kV Gelephu - Salakati Line	-1.07			
Total	246.99	Auxiliary Consumption & Transformation Losses at Generator end	0.91%			
3	336MW CHP	Unit- I	83.14	220kV CHP - Birpara Line- I	0.00	Unit-III on Standby. Unit IV under Annual Maintenance. 220kV CHP_Birpara Line I & II under breakdown.
		Unit- II	83.96	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	68.44	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	72.36	
		-	-	220kV Malbase - Birpara Line	-32.20	
		-	-	66kV CHP - Chumdo Line	20.44	
		-	-	66kV CHP - Gedu Line	3.23	
		-	-	3x3MVA, 66/11kV TFR	1.94	
Total	167.10	Auxiliary Consumption & Transformation Losses at Generator end	0.41%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	64.80	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	8.50	66kV BHP - Lobeyasa Line	28.50	
		Total	8.50	220kV BHP - Tsirang Line	-68.77	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.86	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	16.80	30MVA ICT, 220/66kV (HV)	21.11	
		Total	16.80	Auxiliary Consumption & Transformation Losses at Generator end	-0.36%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	26.99	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	27.80	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.18	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	27.80	Auxiliary Consumption & Transformation Losses at Gen. end	1.83%			
7	60MW KHP	Unit- I	15.05	132kV KHP - Nangkhoh Line	11.21	Unit III on standby. Unit-IV under Annual Maintenance. 132kV Motanga-Rangia Line under Maintenance.
		Unit-II	15.09	132kV KHP - Kilikhar Line	17.97	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.40	
		Unit- IV	0.00	132kV Motanga - Rangia Line	0.00	
		Total	30.14	Auxiliary Consumption & Transformation Losses at Generator end	1.86%	

Note: Generation-Load Summary (MW) for January 08, 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	220.20	366.97	365.86	-100.83	1.11
2	Eastern Grid	277.13	103.64	100.83	127.55	2.81
Total		497.33	470.61	466.69	26.72	3.92

Note: Generation-Load Summary for January 08, 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	327.60	274.16	272.81	37.75	1.35
2	Eastern Grid	130.64	57.54	56.73	88.79	0.81
Total		458.24	331.70	329.54	126.54	2.16

NOTE- MHP and 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: January 9, 2022
Hours: 09:00 Hours

Date **Time** **Load(MW)**
 30-Dec-21 18:00hrs 487.76

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	THP under total shutdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	0.00	400kV THP - Malbase Line - III	0.00	
		Unit- V	0.00	400kV Malbase - Siliguri Line	-55.37	
		Unit- VI	0.00	-	-	
		Total	0.00	Auxiliary Consumption & Transformation Losses at Generator end	0.00%	
2	720MW MHP	Unit-I	50.16	400kV MHP - Jigmeling Line - I	172.32	Unit-II on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line I (Interim) under shutdown. 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	123.45	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	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)	78.13	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	35.63	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	56.01	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.53	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.81	
		-	-	220kV Tsirang - Jigmeling Line	-22.01	
-	-	132kV Gelephu - Salakati Line	2.06			
Total	173.61	Auxiliary Consumption & Transformation Losses at Generator end	0.74%			
3	336MW CHP	Unit- I	90.53	220kV CHP - Birpara Line- I	0.00	Unit-III on Standby. Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line-I & II under breakdown..
		Unit- II	90.74	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	84.86	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	74.48	
		-	-	220kV Malbase - Birpara Line	-9.04	
		-	-	66kV CHP - Chumdo Line	17.94	
		-	-	66kV CHP - Gedu Line	2.77	
		-	-	3x3MVA, 66/11kV TFR	1.70	
Total	181.27	Auxiliary Consumption & Transformation Losses at Generator end	-0.26%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	47.60	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	8.50	66kV BHP - Lobeyasa Line	25.37	
		Total	8.50	220kV BHP - Tsirang Line	-48.56	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.64	
		Unit- II	16.60	30MVA ICT, 220/66kV (HV)	17.76	
		Total	16.60	Auxiliary Consumption & Transformation Losses at Generator end	0.20%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	28.72	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	29.50	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.39	
		-	-	5MVA, 220/33kV TFR	0.70	
Total	29.50	Auxiliary Consumption & Transformation Losses at Generator end	0.27%			
7	60MW KHP	Unit- I	15.10	132kV KHP - Nangkhoh Line	14.64	Unit III on standby. Unit-IV under Annual Maintenance.
		Unit-II	15.10	132kV KHP - Kilikhar Line	14.51	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.59	
		Unit- IV	0.00	132kV Motanga - Rangia Line	0.36	
		Total	30.20	Auxiliary Consumption & Transformation Losses at Generator end	1.52%	

Note: Generation-Load Summary (MW) for January 09, 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	235.87	322.29	322.64	-64.41	-0.35
2	Eastern Grid	203.81	87.74	85.99	94.06	1.75
Total		439.68	410.03	408.63	29.65	1.40

Note: Generation-Load Summary for January 09, 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	310.35	227.73	223.12	68.79	4.61
2	Eastern Grid	135.33	47.08	46.67	102.08	0.41
Total		445.68	274.81	269.79	170.87	5.02

NOTE-BHP and KHP 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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