

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	January 11, 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	-72.73	
		Unit- VI	0.00	-	-	
		Total	0.00	Auxiliary Consumption & Transformation Losses at Generator end	0.00%	
2	720MW MHP	Unit-I	99.74	400kV MHP - Jigmeling Line - I	253.53	Unit-II on Standby. Unit-IV under dry spin. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II on standby 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	155.90	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)	119.91	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	50.90	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	78.34	
		-	-	80MVA, 220/132kV ICT - I (HV)	28.10	
		-	-	80MVA, 220/132kV ICT - II (HV)	28.63	
		-	-	220kV Tsirang - Jigmeling Line	-47.15	
-	-	132kV Gelephu - Salakati Line	-1.00			
Total	255.64	Auxiliary Consumption & Transformation Losses at Generator end	0.83%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.00	Unit-I on Standby,Unit-III under Annual Maintenance 220kV CHP_Birpara Line I & II under breakdown.
		Unit- II	86.68	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	68.35	
		Unit- IV	82.90	220kV CHP - Semtokha Line- IV	72.65	
		-	-	220kV Malbase - Birpara Line	-31.84	
		-	-	66kV CHP - Chumdo Line	21.00	
		-	-	66kV CHP - Gedu Line	2.90	
		-	-	3x3MVA, 66/11kV TFR	1.98	
Total	169.58	Auxiliary Consumption & Transformation Losses at Generator end	1.59%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	65.20	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	8.20	66kV BHP - Lobeyasa Line	28.29	
		Total	8.20	220kV BHP - Tsirang Line	-69.90	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.88	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	16.20	30MVA ICT, 220/66kV (HV)	21.23	
		Total	16.20	Auxiliary Consumption & Transformation Losses at Generator end	-0.29%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	27.27	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	27.50	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.70	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	27.50	Auxiliary Consumption & Transformation Losses at Gen. end	0.11%			
7	60MW KHP	Unit- I	15.06	132kV KHP - Nangkhor Line	9.78	Unit-III tripped at 16:36hrs(10.01.2021) Unit-IV under Annual Maintenance.
		Unit-II	15.05	132kV KHP - Kilikhar Line	19.15	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.68	
		Unit- IV	0.00	132kV Motanga - Rangia Line	7.03	
		Total	30.11	Auxiliary Consumption & Transformation Losses at Generator end	1.66%	

Note: Generation-Load Summary (MW) for January 11, 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	221.48	373.20	370.54	-104.57	2.66
2	Eastern Grid	285.75	103.33	100.72	135.27	2.61
Total		507.23	476.53	471.26	30.70	5.27

Note: Generation-Load Summary for January 11, 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	312.90	258.13	256.61	36.97	1.52
2	Eastern Grid	141.60	60.34	59.13	99.06	1.21
Total		454.50	318.47	315.74	136.03	2.73

NOTE- All the load 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 12, 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	-66.93	
		Unit- VI	0.00	-	-	
		Total	0.00	Auxiliary Consumption & Transformation Losses at Generator end	0.00%	
2	720MW MHP	Unit-I	79.89	400kV MHP - Jigmeling Line - I	225.56	Unit-II on Standby. Unit-IV under dry spin. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II on standby 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	147.10	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)	100.08	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	49.09	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	74.80	
		-	-	80MVA, 220/132kV ICT - I (HV)	18.76	
		-	-	80MVA, 220/132kV ICT - II (HV)	19.08	
		-	-	220kV Tsirang - Jigmeling Line	-47.06	
-	-	132kV Gelephu - Salakati Line	-0.48			
Total	226.99	Auxiliary Consumption & Transformation Losses at Generator end	0.63%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.00	Unit-I on Standby. Unit-III under Annual Maintenance. 220kV CHP_Birpara Line-I & II under breakdown..
		Unit- II	70.79	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	56.98	
		Unit- IV	69.28	220kV CHP - Semtokha Line- IV	60.25	
		-	-	220kV Malbase - Birpara Line	-35.90	
		-	-	66kV CHP - Chumdo Line	18.61	
		-	-	66kV CHP - Gedu Line	2.31	
		-	-	3x3MVA, 66/11kV TFR	1.40	
Total	140.07	Auxiliary Consumption & Transformation Losses at Generator end	0.37%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	68.10	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	7.90	66kV BHP - Lobeyasa Line	26.07	
		Total	7.90	220kV BHP - Tsirang Line	-70.47	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.61	
		Unit- II	16.00	30MVA ICT, 220/66kV (HV)	18.71	
		Total	16.00	Auxiliary Consumption & Transformation Losses at Generator end	-1.72%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	27.46	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	27.70	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.62	
		-	-	5MVA, 220/33kV TFR	0.24	
Total	27.70	Auxiliary Consumption & Transformation Losses at Generator end	0.00%			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	12.18	Unit I on standby. Unit-IV under Annual Maintenance.
		Unit-II	15.19	132kV KHP - Kilikhar Line	17.19	
		Unit- III	15.16	5MVA, 132/11kV TFR	0.00	
		Unit- IV	0.00	132kV Motanga - Rangia Line	12.59	
		Total	30.35	Auxiliary Consumption & Transformation Losses at Generator end	3.23%	

Note: Generation-Load Summary (MW) for January 12, 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	191.67	341.56	341.45	-102.83	0.11
2	Eastern Grid	257.34	74.28	71.87	136.00	2.41
Total		449.01	415.84	413.32	33.17	2.52

Note: Generation-Load Summary for January 12, 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	310.29	248.37	243.81	47.59	4.56
2	Eastern Grid	137.73	53.05	51.88	99.01	1.17
Total		448.02	301.42	295.69	146.60	5.73

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.
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