

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 21, 2021
Hours: 18:00 Hours

Date	Time	Load(MW)
12-Dec-21	18:00hrs	472.23

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 & III under Annual Maintenance & Unit-V on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line II on Standby
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	78.88	
		Unit- IV	120.39	400kV THP - Malbase Line - III	176.58	
		Unit- V	0.00	400kV Malbase - Siliguri Line	60.06	
		Unit- VI	139.20	-	-	
		Total	259.59	Auxiliary Consumption & Transformation Losses at Generator end	1.59%	
2	720MW MHP	Unit-I	130.78	400kV MHP - Jigmeling Line - I	129.17	Unit-II & III 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 II (Interim) on standby. 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	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)	109.43	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	7.12	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	11.85	
		-	-	80MVA, 220/132kV ICT - I (HV)	19.61	
		-	-	80MVA, 220/132kV ICT - II (HV)	19.90	
		-	-	220kV Tsirang - Jigmeling Line	-54.17	
-	-	132kV Gelephu - Salakati Line	-7.85			
Total	130.78	Auxiliary Consumption & Transformation Losses at Generator end	1.23%			
3	336MW CHP	Unit- I	65.28	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit IV under Annual Maintenance. 220kV CHP_Birpara Line I on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-1.90	
		Unit- III	64.27	220kV CHP - Malbase Line- III	22.40	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	82.30	
		-	-	220kV Malbase - Birpara Line	-23.88	
		-	-	66kV CHP - Chumdo Line	21.70	
		-	-	66kV CHP - Gedu Line	2.20	
		-	-	3x3MVA, 66/11kV TFR	1.57	
Total	129.55	Auxiliary Consumption & Transformation Losses at Generator end	0.99%			
4	24MW BHP (U/S)	Unit- I	6.90	220kV BHP - Semtokha Line	57.00	L/S Unit I & II under Annual Maintenance.
		Unit- II	2.50	66kV BHP - Lobeyasa Line	32.00	
		Total	9.40	220kV BHP - Tsirang Line	-80.69	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.95	L/S Unit I & II under Annual Maintenance.
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	23.25	
		Total	0.00	Auxiliary Consumption & Transformation Losses at Generator end	1.49%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	32.00	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	32.21	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.15	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	32.21	Auxiliary Consumption & Transformation Losses at Gen. end	0.03%			
7	60MW KHP	Unit- I	13.08	132kV KHP - Nangkhoh Line	7.59	Unit II on standby. Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	17.55	
		Unit- III	13.09	5MVA, 132/11kV TFR	0.55	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-1.24	
		Total	26.17	Auxiliary Consumption & Transformation Losses at Generator end	1.83%	

Note: Generation-Load Summary (MW) for December 21, 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	430.75	371.76	366.20	113.16	5.56
2	Eastern Grid	156.95	92.90	90.81	9.88	2.09
Total		587.70	464.66	457.01	123.04	7.65

Note: Generation-Load Summary for December 21, 2020 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	402.41	242.71	235.30	140.20	7.41
2	Eastern Grid	153.03	62.85	61.02	109.68	1.83
Total		555.44	305.56	296.32	249.88	9.24

NOTE- BHP, MHP, CHP and MAT 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: December 22, 2021
Hours: 09:00 Hours

Date	Time	Load(MW)
12-Dec-21	18:00hrs	472.23

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 & III under Annual Maintenance & Unit-V on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line II under Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	55.53	
		Unit- IV	89.90	400kV THP - Malbase Line - III	133.16	
		Unit- V	0.00	400kV Malbase - Siliguri Line	40.47	
		Unit- VI	100.29	-	-	
		Total	190.19	Auxiliary Consumption & Transformation Losses at Generator end	0.79%	
2	720MW MHP	Unit-I	139.98	400kV MHP - Jigmeling Line - I	138.55	Unit-II & III 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 II (Interim) on standby. 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	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)	82.12	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	21.02	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	32.65	
		-	-	80MVA, 220/132kV ICT - I (HV)	18.92	
		-	-	80MVA, 220/132kV ICT - II (HV)	19.26	
		-	-	220kV Tsirang - Jigmeling Line	-29.55	
-	-	132kV Gelephu - Salakati Line	1.46			
Total	139.98	Auxiliary Consumption & Transformation Losses at Generator end	1.02%			
3	336MW CHP	Unit- I	84.35	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line-I on standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	16.35	
		Unit- III	81.26	220kV CHP - Malbase Line- III	49.00	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	79.00	
		-	-	220kV Malbase - Birpara Line	-16.40	
		-	-	66kV CHP - Chumdo Line	17.90	
		-	-	66kV CHP - Gedu Line	1.40	
		-	-	3x3MVA, 66/11kV TFR	1.55	
Total	165.61	Auxiliary Consumption & Transformation Losses at Generator end	0.25%			
4	24MW BHP (U/S)	Unit- I	9.20	220kV BHP - Semtokha Line	40.40	U/S Unit-I on standby.L/S Unit-I & II under shutdown.
		Unit- II	0.00	66kV BHP - Lobeysa Line	26.71	
		Total	9.20	220kV BHP - Tsirang Line	-58.61	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.60	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	18.15	
		Total	0.00	Auxiliary Consumption & Transformation Losses at Generator end	1.09%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	32.28	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	32.48	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.13	
		-	-	5MVA, 220/33kV TFR	0.19	
Total	32.48	Auxiliary Consumption & Transformation Losses at Generator end	0.03%			
7	60MW KHP	Unit- I	11.60	132kV KHP - Nangkhoh Line	8.75	Unit-II on Standby. Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	13.57	
		Unit- III	11.65	5MVA, 132/11kV TFR	0.51	
		Unit- IV	0.00	132kV Motanga - Rangia Line	0.00	
		Total	23.25	Auxiliary Consumption & Transformation Losses at Generator end	1.81%	

Note: Generation-Load Summary (MW) for December 22, 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	397.48	331.08	329.06	95.95	2.02
2	Eastern Grid	163.23	78.55	76.70	55.13	1.85
Total		560.71	409.63	405.76	151.08	3.87

Note: Generation-Load Summary for December 22, 2020 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	400.79	221.38	219.21	156.33	2.17
2	Eastern Grid	162.40	53.42	52.84	132.06	0.58
Total		563.19	274.80	272.05	288.39	2.75

NOTE-CHP & 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:

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