

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: December 13, 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. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line IV under Maintenance.
		Unit- II	0.00	400kV THP - Siliguri Line - II	97.93	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	108.24	400kV THP - Malbase Line - III	185.05	
		Unit- V	77.81	400kV Malbase - Siliguri Line	71.94	
		Unit- VI	100.39	-	-	
		Total	286.44	Auxiliary Consumption & Transformation Losses at Generator end	1.21%	
2	720MW MHP	Unit-I	155.16	400kV MHP - Jigmeling Line - I	153.40	Unit-II & III on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & III on standby. 400kV MHP-JLG Line IV under Annual Maintenance. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 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)	82.46	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	27.33	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	42.60	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.98	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.31	
		-	-	220kV Tsirang - Jigmeling Line	-24.40	
-	-	132kV Gelephu - Salakati Line	-5.27			
Total	155.16	Auxiliary Consumption & Transformation Losses at Generator end	1.13%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.00	Unit-I on Standby. Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line I on standby.
		Unit- II	73.39	220kV CHP - Birpara Line- II	13.77	
		Unit- III	75.53	220kV CHP - Malbase Line- III	29.02	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	79.82	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	20.87	
		-	-	66kV CHP - Gedu Line	3.30	
		-	-	3x3MVA, 66/11kV TFR	2.28	
Total	148.92	Auxiliary Consumption & Transformation Losses at Generator end	-0.09%			
4	24MW BHP (U/S)	Unit- I	5.50	220kV BHP - Semtokha Line	56.10	
		Unit- II	5.10	66kV BHP - Lobeyasa Line	30.22	
		Total	10.60	220kV BHP - Tsirang Line	-56.22	
5	40MW BHP (L/S)	Unit- I	10.30	5MVA, 66/11kV TFR	0.99	
		Unit- II	10.20	30MVA ICT, 220/66kV (HV)	20.97	
		Total	20.50	Auxiliary Consumption & Transformation Losses at Generator end	0.03%	
6	126MW DHP	Unit-I	36.51	220kV DHP - Tsirang Line	36.29	Unit-II on standby. 220kV DHP-Dagapela Line on standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.93	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	36.51	Auxiliary Consumption & Transformation Losses at Gen. end	0.05%			
7	60MW KHP	Unit- I	14.49	132kV KHP - Nangkhoh Line	10.30	Unit III on standby. Unit-IV under Annual Maintenance.
		Unit-II	14.45	132kV KHP - Kilikhar Line	17.65	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.80	
		Unit- IV	0.00	132kV Motanga - Rangia Line	1.99	
		Total	28.94	Auxiliary Consumption & Transformation Losses at Generator end	0.66%	

Note: Generation-Load Summary (MW) for December 13, 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	502.97	343.73	340.38	183.64	3.35
2	Eastern Grid	184.10	93.05	91.10	66.65	1.95
Total		687.07	436.78	431.48	250.29	5.30

Note: Generation-Load Summary for December 13, 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	404.82	216.22	200.45	188.60	15.77
2	Eastern Grid	172.51	166.40	46.69	-20.29	119.71
Total		577.33	382.62	247.14	168.31	135.48

NOTE- BHP, MAT and MHP data collected from site.

- 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:
 - 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.
 - The clocks of all the locations are not synchronized.
- 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 14, 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. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line IV under Maintenance.
		Unit- II	0.00	400kV THP - Siliguri Line - II	91.86	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	98.57	400kV THP - Malbase Line - III	179.58	
		Unit- V	78.18	400kV Malbase - Siliguri Line	66.77	
		Unit- VI	99.75	-	-	
		Total	276.50	Auxiliary Consumption & Transformation Losses at Generator end	1.83%	
2	720MW MHP	Unit-I	151.15	400kV MHP - Jigmeling Line - I	150.09	Unit-II & III on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & III on standby. 400kV MHP-JLG Line IV under Annual Maintenance. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. JLG_ALI Line I (Direct) under 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)	67.15	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	31.86	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	49.62	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.94	
		-	-	80MVA, 220/132kV ICT - II (HV)	18.19	
		-	-	220kV Tsirang - Jigmeling Line	-24.40	
-	-	132kV Gelephu - Salakati Line	1.18			
Total	151.15	Auxiliary Consumption & Transformation Losses at Generator end	0.70%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.00	Unit-I on Standby. Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line-I on standby.
		Unit- II	73.00	220kV CHP - Birpara Line- II	7.40	
		Unit- III	75.00	220kV CHP - Malbase Line- III	44.40	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	72.97	
		-	-	220kV Malbase - Birpara Line	-23.17	
		-	-	66kV CHP - Chumdo Line	17.92	
		-	-	66kV CHP - Gedu Line	3.36	
		-	-	3x3MVA, 66/11kV TFR	1.74	
Total	148.00	Auxiliary Consumption & Transformation Losses at Generator end	0.14%			
4	24MW BHP (U/S)	Unit- I	5.40	220kV BHP - Semtokha Line	50.80	
		Unit- II	5.00	66kV BHP - Lobeysa Line	27.32	
		Total	10.40	220kV BHP - Tsirang Line	-47.61	
5	40MW BHP (L/S)	Unit- I	10.30	5MVA, 66/11kV TFR	0.48	
		Unit- II	10.30	30MVA ICT, 220/66kV (HV)	17.63	
		Total	20.60	Auxiliary Consumption & Transformation Losses at Generator end	0.03%	
6	126MW DHP	Unit-I	35.79	220kV DHP - Tsirang Line	35.56	Unit-II on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.07	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	35.79	Auxiliary Consumption & Transformation Losses at Generator end	0.08%			
7	60MW KHP	Unit- I	13.22	132kV KHP - Nangkhoh Line	14.72	Unit-III on Standby. Unit-IV under Annual Maintenance.
		Unit-II	13.28	132kV KHP - Kilikhar Line	11.07	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.65	
		Unit- IV	0.00	132kV Motanga - Rangia Line	2.54	
		Total	26.50	Auxiliary Consumption & Transformation Losses at Generator end	0.23%	

Note: Generation-Load Summary (MW) for December 14, 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	491.29	372.83	367.52	142.86	5.31
2	Eastern Grid	177.65	68.05	66.93	85.20	1.12
Total		668.94	440.88	434.45	228.06	6.43

Note: Generation-Load Summary for December 14, 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	401.37	148.85	145.83	144.92	3.02
2	Eastern Grid	176.63	32.99	31.24	151.24	1.75
Total		578.00	181.84	177.07	296.16	4.77

NOTE- KHP, MAT, MHP & BHP data collected from site.

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 - 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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