

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	March 15, 2023
Hours:	18:00 Hours

Date	Time	Load(MW)
10-Feb-23	19:12:46hrs	646.17

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	9.90	400kV THP - Siliguri Line - I	0.00	Unit-IV, V & VI under AMP. Unit-III on Standby. 400kV THP- Siliguri Line I under Shutdown. 400kV THP- Siliguri Line IV on Standby.
		Unit- II	10.60	400kV THP - Siliguri Line - II	-24.80	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	0.00	400kV THP - Malbase Line - III	45.20	
		Unit- V	0.00	400kV Malbase - Siliguri Line	-38.76	
		Unit- VI	0.00	-	-	
		Total	20.50	Auxiliary Consumption & Transformation Losses at Generator end	0.49%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00	Unit-I & Unit-III under AMP. 400kV MHP-JLG Line I, II & III on Standby. 132kV MHP_Yurmoo Line- I not in service. 400kV JLG_ALI Line- I (Interim) under Shutdown. 400kV JLG_ALI line -II (Interim) on Standby.
		Unit-II	15.22	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	15.26	400kV MHP - Jigmeling Line - IV	4.01	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	25.92	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	77.58	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	-36.78	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	-38.75	
		-	-	80MVA, 220/132kV ICT - I (HV)	1.55	
		-	-	80MVA, 220/132kV ICT - II (HV)	1.57	
		-	-	220kV Tsirang - Jigmeling Line	-73.96	
-	-	132kV Gelephu - Salakati Line	-12.49			
Total	30.48	Auxiliary Consumption & Transformation Losses at Generator end	1.80%			
3	336MW CHP	Unit- I	20.60	220kV CHP - Birpara Line- I	0.00	Unit-II and IV under AMP. 220kV CHP-Birpara Line-I on Standby. 66kV CHP_GED line tripped at 17:47hrs.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-41.80	
		Unit- III	20.40	220kV CHP - Malbase Line- III	-11.20	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	65.50	
		-	-	220kV Malbase - Birpara Line	-60.01	
		-	-	66kV CHP - Chumdo Line	26.20	
		-	-	66kV CHP - Gedu Line	0.00	
		-	-	3x3MVA, 66/11kV TFR	0.95	
Total	41.00	Auxiliary Consumption & Transformation Losses at Generator end	3.29%			
4	24MW BHP (U/S)	Unit- I	5.10	220kV BHP - Semtokha Line	77.40	L/S & U/S Unit-II under AMP.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	26.30	
		Total	5.10	220kV BHP - Tsirang Line	-87.79	
5	40MW BHP (L/S)	Unit- I	11.20	5MVA, 66/11kV TFR	0.69	L/S & U/S Unit-II under AMP.
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	22.06	
		Total	11.20	Auxiliary Consumption & Transformation Losses at Generator end	-1.84%	
6	126MW DHP	Unit-I	17.20	220kV DHP - Tsirang Line	16.97	Unit-II on Standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	0.50	
		-	-	5MVA, 220/33kV TFR	0.22	
Total	17.20	Auxiliary Consumption & Transformation Losses at Gen. end	0.06%			
7	60MW KHP	Unit- I	10.12	132kV KHP - Nangkhoh Line	4.36	Unit-III on Standby and Unit-II under AMP
		Unit-II	0.00	132kV KHP - Kilikhar Line	15.14	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.58	
		Unit- IV	10.16	132kV Motanga - Rangia Line	3.38	
		Total	20.28	Auxiliary Consumption & Transformation Losses at Generator end	0.99%	

Note: Generation-Load Summary (MW) for March 15, 2023 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	95.00	334.33	333.17	-165.37	1.16
2	Eastern Grid	50.76	61.44	60.69	-84.64	0.75
Total		145.76	395.77	393.86	-250.01	1.91

Note: Generation-Load Summary for March 15, 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	236.97	332.25	330.15	-35.91	2.10
2	Eastern Grid	228.58	42.89	40.57	126.32	2.32
Total		465.55	375.14	370.72	90.41	4.42

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:	March 16, 2023
Hours:	09:00 Hours

Date	Time	Load(MW)
10-Feb-23	19:12:46hrs	646.17

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	138.81	400kV THP - Siliguri Line - I	0.00	Unit-IV, V & VI under AMP. Unit-III on Standby. 400kV THP- Siliguri Line I under shutdown. 400kV THP- Siliguri Line IV on standby
		Unit- II	112.72	400kV THP - Siliguri Line - II	83.87	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	0.00	400kV THP - Malbase Line - III	163.86	
		Unit- V	0.00	400kV Malbase - Siliguri Line	61.47	
		Unit- VI	0.00	-	-	
		Total	251.53	Auxiliary Consumption & Transformation Losses at Generator end	1.51%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00	Unit-I & Unit-III under AMP. 400kV MHP-JLG Line I,II & III on Standby. 132kV MHP_Yurmoo Line-I not in service. 400kV JLG_ALI Line-I (Interim) under Shutdown. 400kV JLG_ALI Line-II (Interim) on Standby.
		Unit-II	70.25	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	90.22	400kV MHP - Jigmeling Line - IV	85.05	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	74.16	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	108.21	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	-11.10	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	-12.55	
		-	-	80MVA, 220/132kV ICT - I (HV)	0.12	
		-	-	80MVA, 220/132kV ICT - II (HV)	0.21	
		-	-	220kV Tsirang - Jigmeling Line	-59.32	
-	-	132kV Gelephu - Salakati Line	-18.61			
Total	160.47	Auxiliary Consumption & Transformation Losses at Generator end	0.79%			
3	336MW CHP	Unit- I	39.28	220kV CHP - Birpara Line- I	0.00	Unit-II and IV under AMP. 220kV CHP-Birpara Line-I on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-22.01	
		Unit- III	40.41	220kV CHP - Malbase Line- III	10.13	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	61.53	
		-	-	220kV Malbase - Birpara Line	-43.68	
		-	-	66kV CHP - Chumdo Line	21.58	
		-	-	66kV CHP - Gedu Line	7.14	
		-	-	3x3MVA, 66/11kV TFR	0.63	
Total	79.69	Auxiliary Consumption & Transformation Losses at Generator end	0.87%			
4	24MW BHP (U/S)	Unit- I	5.00	220kV BHP - Semtokha Line	65.10	L/S & U/S unit-II under AMP.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	23.83	
		Total	5.00	220kV BHP - Tsirang Line	-73.39	
5	40MW BHP (L/S)	Unit- I	10.50	5MVA, 66/11kV TFR	0.41	L/S & U/S unit-II under AMP.
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	19.36	
		Total	10.50	Auxiliary Consumption & Transformation Losses at Generator end	-2.90%	
6	126MW DHP	Unit-I	17.20	220kV DHP - Tsirang Line	16.97	Unit-II on Standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	48.77	
		-	-	5MVA, 220/33kV TFR	0.22	
Total	17.20	Auxiliary Consumption & Transformation Losses at Generator end	0.06%			
7	60MW KHP	Unit- I	15.04	132kV KHP - Nangkhoh Line	5.64	Unit-III & IV on Standby. Unit-II under AMP.
		Unit-II	0.00	132kV KHP - Kilikhar Line	8.59	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.53	
		Unit- IV	0.00	132kV Motanga - Rangia Line	1.55	
		Total	15.04	Auxiliary Consumption & Transformation Losses at Generator end	1.86%	

Note: Generation-Load Summary (MW) for March 16, 2023 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	363.92	343.59	339.54	79.65	4.05
2	Eastern Grid	175.51	156.90	155.36	-40.71	1.54
Total		539.43	500.49	494.90	38.94	5.59

Note: Generation-Load Summary for March 16, 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	201.90	344.99	344.19	-82.57	0.80
2	Eastern Grid	244.29	49.76	47.62	134.01	2.14
Total		446.19	394.75	391.81	51.44	2.94

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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