

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	April 13, 2022
Hours:	18:00 Hours

Date	Time	Load(MW)
12-Jan-22	18:00hrs	492.25

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	136.11	400kV THP - Siliguri Line - I	0.00	Unit IV under AMP. Unit III & V on Standby. 400kV THP- Siliguri - I under Shutdown. 400kV THP- Siliguri - II under Breakdown.
		Unit- II	97.24	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	143.65	
		Unit- IV	0.00	400kV THP - Malbase Line - III	215.72	
		Unit- V	0.00	400kV Malbase - Siliguri Line	126.02	
		Unit- VI	129.37	-	-	
		Total	362.72	Auxiliary Consumption & Transformation Losses at Generator end	0.92%	
2	720MW MHP	Unit-I	95.22	400kV MHP - Jigmeling Line - I	105.13	Unit-IV standby.Unit II under AMP. 400kV MHP-JLG Line II & III on Standby. 132kV MHP_Yurmoo line I & II not in Service. 400kV JLG-ALI I (Interim) on Standby. 400kV JLG_ALI Line II (Direct) on Standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	14.93	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	101.06	400kV MHP - Jigmeling Line - IV	105.59	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	48.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	72.50	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.70	
		-	-	80MVA, 220/132kV ICT - II (HV)	25.09	
		-	-	220kV Tsirang - Jigmeling Line	-51.76	
-	-	132kV Gelephu - Salakati Line	-5.85			
Total	211.21	Auxiliary Consumption & Transformation Losses at Generator end	0.23%			
3	336MW CHP	Unit- I	63.82	220kV CHP - Birpara Line- I	24.11	Unit II under shutdown.
		Unit- II	0.00	220kV CHP - Birpara Line- II	24.09	
		Unit- III	63.96	220kV CHP - Malbase Line- III	63.67	
		Unit- IV	61.39	220kV CHP - Semtokha Line- IV	57.94	
		-	-	220kV Malbase - Birpara Line	-9.64	
		-	-	66kV CHP - Chumdo Line	13.81	
		-	-	66kV CHP - Gedu Line	3.79	
		-	-	3x3MVA, 66/11kV TFR	1.09	
Total	189.17	Auxiliary Consumption & Transformation Losses at Generator end	0.35%			
4	24MW BHP (U/S)	Unit- I	6.20	220kV BHP - Semtokha Line	45.30	U/S Unit-II & L/S Unit-II under AMP.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	20.63	
		Total	6.20	220kV BHP - Tsirang Line	-46.76	
5	40MW BHP (L/S)	Unit- I	12.70	5MVA, 66/11kV TFR	0.50	U/S Unit-II & L/S Unit-II under AMP.
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	14.41	
		Total	12.70	Auxiliary Consumption & Transformation Losses at Generator end	-4.07%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00	Unit-I under AMP. 220kV DHP_Tsirang Line on Standby.
		Unit-II	23.99	220kV DHP - Dagapela Line	23.72	
		-	-	220kV Jigmeling - Dagapela Line	-14.71	
		-	-	5MVA, 220/33kV TFR	0.26	
Total	23.99	Auxiliary Consumption & Transformation Losses at Gen. end	0.04%			
7	60MW KHP	Unit- I	13.05	132kV KHP - Nangkhoh Line	18.53	Unit-III under Shutdown.
		Unit-II	13.09	132kV KHP - Kilikhar Line	19.93	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.39	
		Unit- IV	13.06	132kV Motanga - Rangia Line	26.58	
		Total	39.20	Auxiliary Consumption & Transformation Losses at Generator end	0.88%	

Note: Generation-Load Summary (MW) for April 13, 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	594.78	323.60	320.34	308.23	3.26
2	Eastern Grid	250.41	72.13	71.29	141.23	0.84
Total		845.19	395.73	391.63	449.46	4.10

Note: Generation-Load Summary for April 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	267.28	255.81	258.73	-3.43	-2.92
2	Eastern Grid	151.37	73.19	71.64	93.08	1.55
Total		418.65	329.00	330.37	89.65	-1.37

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.
- 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:	April 14, 2022
Hours:	09:00 Hours

Date	Time	Load(MW)
12-Jan-22	18:00hrs	492.25

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	137.38	400kV THP - Siliguri Line - I	0.00	Unit IV under AMP. Unit III & V on Standby. 400kV THP- Siliguri - I under Shutdown. 400kV THP- Siliguri - II under Breakdown.
		Unit- II	99.53	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	135.72	
		Unit- IV	0.00	400kV THP - Malbase Line - III	197.99	
		Unit- V	0.00	400kV Malbase - Siliguri Line	121.42	
		Unit- VI	99.78	-	-	
		Total	336.69	Auxiliary Consumption & Transformation Losses at Generator end	0.89%	
2	720MW MHP	Unit-I	134.60	400kV MHP - Jigmeling Line - I	144.08	Unit II under Annual Maintenance. 400kV MHP-JLG Line II & III on Standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG-ALI I (Interim) on Standby. 400kV JLG_ALI Line II (Direct) on Standby
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	14.84	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	140.49	400kV MHP - Jigmeling Line - IV	144.70	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	73.11	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	83.63	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	127.63	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	13.22	
		-	-	80MVA, 220/132kV ICT - II (HV)	13.42	
		-	-	220kV Tsirang - Jigmeling Line	-61.14	
-	-	132kV Gelephu - Salakati Line	-1.28			
Total	289.93	Auxiliary Consumption & Transformation Losses at Generator end	0.40%			
3	336MW CHP	Unit- I	54.61	220kV CHP - Birpara Line- I	19.55	Unit II under Shutdown.
		Unit- II	0.00	220kV CHP - Birpara Line- II	19.40	
		Unit- III	56.24	220kV CHP - Malbase Line- III	69.59	
		Unit- IV	57.68	220kV CHP - Semtokha Line- IV	42.19	
		-	-	220kV Malbase - Birpara Line	-22.01	
		-	-	66kV CHP - Chumdo Line	12.48	
		-	-	66kV CHP - Gedu Line	4.06	
		-	-	3x3MVA, 66/11kV TFR	1.00	
Total	168.53	Auxiliary Consumption & Transformation Losses at Generator end	0.15%			
4	24MW BHP (U/S)	Unit- I	6.60	220kV BHP - Semtokha Line	58.90	U/S Unit-II & L/S Unit-II under AMP.
		Unit- II	0.00	66kV BHP - Lobeysa Line	20.15	
		Total	6.60	220kV BHP - Tsirang Line	-55.96	
5	40MW BHP (L/S)	Unit- I	16.50	5MVA, 66/11kV TFR	0.28	U/S Unit-II & L/S Unit-II under AMP.
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	13.96	
		Total	16.50	Auxiliary Consumption & Transformation Losses at Generator end	-1.17%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00	Unit-I Under AMP. 220kV DHP_Tsirang Line on Standby.
		Unit-II	23.46	220kV DHP - Dagapela Line	23.25	
		-	-	220kV Jigmeling - Dagapela Line	-14.50	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	23.46	Auxiliary Consumption & Transformation Losses at Generator end	0.04%			
7	60MW KHP	Unit- I	15.88	132kV KHP - Nangkhoh Line	29.93	Unit-III under Shutdown.
		Unit-II	16.50	132kV KHP - Kilikhar Line	18.18	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.24	
		Unit- IV	16.48	132kV Motanga - Rangia Line	21.45	
		Total	48.86	Auxiliary Consumption & Transformation Losses at Generator end	1.04%	

Note: Generation-Load Summary (MW) for April 14, 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	551.78	324.34	321.36	274.08	2.98
2	Eastern Grid	338.79	60.72	59.06	231.43	1.66
Total		890.57	385.06	380.42	505.51	4.64

Note: Generation-Load Summary for April 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	263.49	252.09	246.64	-9.03	5.45
2	Eastern Grid	169.26	58.56	57.49	131.39	1.07
Total		432.75	310.65	304.13	122.36	6.52

NOTE-BHP 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.
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