

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	April 15, 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	108.18	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	118.24	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	130.38	
		Unit- IV	0.00	400kV THP - Malbase Line - III	192.57	
		Unit- V	0.00	400kV Malbase - Siliguri Line	115.47	
		Unit- VI	98.81	-	-	
		Total	325.23	Auxiliary Consumption & Transformation Losses at Generator end	0.70%	
2	720MW MHP	Unit-I	130.15	400kV MHP - Jigmeling Line - I	124.15	Unit III on Standby. Unit II under AMP. 400kV MHP-JLG Line II under AMP. 400kV MHP-JLG Line III on Standby. 132kV MHP_Yurmo 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	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	120.12	400kV MHP - Jigmeling Line - IV	124.37	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	81.89	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	66.65	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	98.76	
		-	-	80MVA, 220/132kV ICT - I (HV)	12.46	
		-	-	80MVA, 220/132kV ICT - II (HV)	12.73	
		-	-	220kV Tsirang - Jigmeling Line	-67.12	
-	-	132kV Gelephu - Salakati Line	-8.33			
Total	250.27	Auxiliary Consumption & Transformation Losses at Generator end	0.70%			
3	336MW CHP	Unit- I	84.12	220kV CHP - Birpara Line- I	19.14	Unit III on Standby. Unit II under shutdown.
		Unit- II	0.00	220kV CHP - Birpara Line- II	19.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	62.36	
		Unit- IV	80.21	220kV CHP - Semtokha Line- IV	44.67	
		-	-	220kV Malbase - Birpara Line	-18.14	
		-	-	66kV CHP - Chumdo Line	14.06	
		-	-	66kV CHP - Gedu Line	2.80	
		-	-	3x3MVA, 66/11kV TFR	1.28	
Total	164.33	Auxiliary Consumption & Transformation Losses at Generator end	0.62%			
4	24MW BHP (U/S)	Unit- I	6.10	220kV BHP - Semtokha Line	59.86	U/S Unit-II & L/S Unit-II under AMP.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	21.44	
		Total	6.10	220kV BHP - Tsirang Line	-62.93	
5	40MW BHP (L/S)	Unit- I	12.90	5MVA, 66/11kV TFR	0.45	U/S Unit-II & L/S Unit-II under AMP.
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	15.96	
		Total	12.90	Auxiliary Consumption & Transformation Losses at Generator end	0.95%	
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	20.98	220kV DHP - Dagapela Line	20.73	
		-	-	220kV Jigmeling - Dagapela Line	-11.74	
		-	-	5MVA, 220/33kV TFR	0.24	
Total	20.98	Auxiliary Consumption & Transformation Losses at Gen. end	0.05%			
7	60MW KHP	Unit- I	16.53	132kV KHP - Nangkhoh Line	29.42	Unit-III under Shutdown.
		Unit-II	16.55	132kV KHP - Kilikhar Line	19.49	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.34	
		Unit- IV	16.57	132kV Motanga - Rangia Line	19.06	
		Total	49.65	Auxiliary Consumption & Transformation Losses at Generator end	0.81%	

Note: Generation-Load Summary (MW) for April 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	529.54	319.07	315.58	265.85	3.49
2	Eastern Grid	299.92	68.40	66.25	176.14	2.15
Total		829.46	387.47	381.83	441.99	5.64

Note: Generation-Load Summary for April 15, 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	271.34	247.77	245.13	4.02	2.64
2	Eastern Grid	163.23	66.64	65.12	116.14	1.52
Total		434.57	314.41	310.25	120.16	4.16

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 16, 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	107.30	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	107.20	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	126.41	
		Unit- IV	0.00	400kV THP - Malbase Line - III	185.04	
		Unit- V	99.60	400kV Malbase - Siliguri Line	112.37	
		Unit- VI		-	-	
		Total	314.10	Auxiliary Consumption & Transformation Losses at Generator end	0.84%	
2	720MW MHP	Unit-I	115.19	400kV MHP - Jigmeling Line - I	124.52	Unit II under Annual Maintenance. 400kV MHP-JLG Line II under AMP. 400kV MHP-JLG Lin III on Standby. 132kV MHP_Yurmo 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	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	135.63	400kV MHP - Jigmeling Line - IV	124.82	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	64.85	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	72.22	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	108.63	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	6.19	
		-	-	80MVA, 220/132kV ICT - II (HV)	6.32	
		-	-	220kV Tsirang - Jigmeling Line	-64.84	
-	-	132kV Gelephu - Salakati Line	-3.62			
Total	250.82	Auxiliary Consumption & Transformation Losses at Generator end	0.59%			
3	336MW CHP	Unit- I	81.46	220kV CHP - Birpara Line- I	14.84	Unit II under shutdown.
		Unit- II	0.00	220kV CHP - Birpara Line- II	14.81	
		Unit- III	0.00	220kV CHP - Malbase Line- III	71.62	
		Unit- IV	77.77	220kV CHP - Semtokha Line- IV	39.64	
		-	-	220kV Malbase - Birpara Line	-31.37	
		-	-	66kV CHP - Chumdo Line	12.88	
		-	-	66kV CHP - Gedu Line	3.36	
		-	-	3x3MVA, 66/11kV TFR	0.86	
Total	159.23	Auxiliary Consumption & Transformation Losses at Generator end	0.77%			
4	24MW BHP (U/S)	Unit- I	6.80	220kV BHP - Semtokha Line	59.00	U/S Unit-II & L/S Unit-II under AMP.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	20.07	
		Total	6.80	220kV BHP - Tsirang Line	-60.38	
5	40MW BHP (L/S)	Unit- I	12.40	5MVA, 66/11kV TFR	0.38	U/S Unit-II & L/S Unit-II under AMP.
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	13.79	
		Total	12.40	Auxiliary Consumption & Transformation Losses at Generator end	0.68%	
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	20.98	220kV DHP - Dagapela Line	20.77	
		-	-	220kV Jigmeling - Dagapela Line	-12.95	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	20.98	Auxiliary Consumption & Transformation Losses at Generator end	0.05%			
7	60MW KHP	Unit- I	16.52	132kV KHP - Nangkhoh Line	31.00	Unit-III under Shutdown.
		Unit-II	16.51	132kV KHP - Kilikhar Line	17.85	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.35	
		Unit- IV	16.53	132kV Motanga - Rangia Line	11.20	
		Total	49.56	Auxiliary Consumption & Transformation Losses at Generator end	0.72%	

Note: Generation-Load Summary (MW) for April 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	513.51	328.34	324.33	237.06	4.01
2	Eastern Grid	300.38	60.06	58.22	188.43	1.84
Total		813.89	388.40	382.55	425.49	5.85

Note: Generation-Load Summary for April 16, 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	291.97	233.37	228.53	49.77	4.84
2	Eastern Grid	174.18	58.32	57.08	124.69	1.24
Total		466.15	291.69	285.61	174.46	6.08

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.