

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	April 25, 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	80.10	400kV THP - Siliguri Line - I	0.00	Unit-IV under Annual Maintenance & Unit-III & V on standby. 400kV THP-Siliguri line I & II under breakdown
		Unit- II	78.33	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	85.91	
		Unit- IV	0.00	400kV THP - Malbase Line - III	158.89	
		Unit- V	0.00	400kV Malbase - Siliguri Line	69.82	
		Unit- VI	90.05	-	-	
		Total	248.48	Auxiliary Consumption & Transformation Losses at Generator end	1.48%	
2	720MW MHP	Unit-I	99.80	400kV MHP - Jigmeling Line - I	0.00	Unit- III on Standby. 400kV MHP-JLG Line I & 400kV MHP-JLG Line III on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	17.13	400kV MHP - Jigmeling Line - II	107.91	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	101.40	400kV MHP - Jigmeling Line - IV	108.30	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	98.79	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	46.19	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	69.85	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.74	
		-	-	80MVA, 220/132kV ICT - II (HV)	22.29	
		-	-	220kV Tsirang - Jigmeling Line	-64.83	
-	-	132kV Gelephu - Salakati Line	-4.89			
Total	218.33	Auxiliary Consumption & Transformation Losses at Generator end	0.97%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	11.27	Unit-I on Standby. Unit-II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Line- II	11.34	
		Unit- III	69.27	220kV CHP - Malbase Line- III	37.33	
		Unit- IV	59.80	220kV CHP - Semtokha Line- IV	49.31	
		-	-	220kV Malbase - Birpara Line	-10.39	
		-	-	66kV CHP - Chumdo Line	13.21	
		-	-	66kV CHP - Gedu Line	4.21	
		-	-	3x3MVA, 66/11kV TFR	0.98	
Total	129.07	Auxiliary Consumption & Transformation Losses at Generator end	1.10%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	52.20	U/S Unit-I Standby. L/S Unit-II under AMP.
		Unit- II	5.10	66kV BHP - Lobeyssa Line	20.89	
		Total	5.10	220kV BHP - Tsirang Line	-56.50	
5	40MW BHP (L/S)	Unit- I	10.00	5MVA, 66/11kV TFR	0.42	U/S Unit-I Standby. L/S Unit-II under AMP.
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	15.30	
		Total	10.00	Auxiliary Consumption & Transformation Losses at Generator end	-12.65%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00	Unit-I on standby. 220kV DHP_Tsirang Line on Standby.
		Unit-II	18.94	220kV DHP - Dagapela Line	18.72	
		-	-	220kV Jigmeling - Dagapela Line	-10.50	
		-	-	5MVA, 220/33kV TFR	0.24	
Total	18.94	Auxiliary Consumption & Transformation Losses at Gen. end	-0.11%			
7	60MW KHP	Unit- I	13.04	132kV KHP - Nangkhor Line	23.47	Unit-II on Standby.
		Unit-II	0.00	132kV KHP - Kilikhar Line	15.02	
		Unit- III	13.08	5MVA, 132/11kV TFR	0.32	
		Unit- IV	13.11	132kV Motanga - Rangia Line	22.55	
		Total	39.23	Auxiliary Consumption & Transformation Losses at Generator end	1.07%	

Note: Generation-Load Summary (MW) for April 25, 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	411.59	297.97	294.80	167.95	3.17
2	Eastern Grid	257.56	69.53	66.99	133.70	2.54
Total		669.15	367.50	361.79	301.65	5.71

Note: Generation-Load Summary for April 25, 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	409.63	232.80	221.97	176.83	10.83
2	Eastern Grid	219.74	66.48	64.63	153.26	1.85
Total		629.37	299.28	286.60	330.09	12.68

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.
 - 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:	April 26, 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	74.77	400kV THP - Siliguri Line - I	0.00	Unit-IV under Annual Maintenance, Unit-III & V on standby. 400kV THP-Siliguri line I & II under breakdown
		Unit- II	79.07	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	92.68	
		Unit- IV	0.00	400kV THP - Malbase Line - III	149.11	
		Unit- V	0.00	400kV Malbase - Siliguri Line	80.71	
		Unit- VI	89.09	-	-	
		Total	242.93	Auxiliary Consumption & Transformation Losses at Generator end	0.47%	
2	720MW MHP	Unit-I	149.79	400kV MHP - Jigmeling Line - I	0.00	Unit- III on Standby. Unit-II under Annual Maintenance. 400kV MHP-JLG Line I & 400kV MHP-JLG Line III on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	29.79	400kV MHP - Jigmeling Line - II	168.49	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	160.27	400kV MHP - Jigmeling Line - IV	168.96	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	96.68	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	94.65	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	143.80	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	16.22	
		-	-	80MVA, 220/132kV ICT - II (HV)	16.48	
		-	-	220kV Tsirang - Jigmeling Line	-72.76	
-	-	132kV Gelephu - Salakati Line	-4.01			
Total	339.85	Auxiliary Consumption & Transformation Losses at Generator end	0.71%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	7.67	Unit-I on Standby. Unit-II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Line- II	7.57	
		Unit- III	69.27	220kV CHP - Malbase Line- III	56.91	
		Unit- IV	60.16	220kV CHP - Semtokha Line- IV	38.58	
		-	-	220kV Malbase - Birpara Line	-31.81	
		-	-	66kV CHP - Chumdo Line	11.88	
		-	-	66kV CHP - Gedu Line	4.43	
		-	-	3x3MVA, 66/11kV TFR	0.81	
Total	129.43	Auxiliary Consumption & Transformation Losses at Generator end	1.22%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	59.70	U/S Unit-I & L/S Unit-II under AMP.
		Unit- II	5.60	66kV BHP - Lobeyasa Line	19.87	
		Total	5.60	220kV BHP - Tsirang Line	-63.98	
5	40MW BHP (L/S)	Unit- I	10.10	5MVA, 66/11kV TFR	0.36	U/S Unit-I & L/S Unit-II under AMP.
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	14.81	
		Total	10.10	Auxiliary Consumption & Transformation Losses at Generator end	-1.59%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00	Unit-I on Standby. 220kV DHP_Tsirang Line on Standby.
		Unit-II	18.77	220kV DHP - Dagapela Line	18.54	
		-	-	220kV Jigmeling - Dagapela Line	-10.53	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	18.77	Auxiliary Consumption & Transformation Losses at Generator end	0.16%			
7	60MW KHP	Unit- I	15.24	132kV KHP - Nangkhor Line	0.00	Unit-II on Standby. 132kV KHP_Nangkor Line under shutdown
		Unit-II	0.00	132kV KHP - Kilikhar Line	45.14	
		Unit- III	15.26	5MVA, 132/11kV TFR	0.31	
		Unit- IV	15.20	132kV Motanga - Rangia Line	18.77	
		Total	45.70	Auxiliary Consumption & Transformation Losses at Generator end	0.55%	

Note: Generation-Load Summary (MW) for April 26, 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	406.83	312.24	309.74	156.82	2.50
2	Eastern Grid	385.55	70.11	67.46	253.21	2.65
Total		792.38	382.35	377.20	410.03	5.15

Note: Generation-Load Summary for April 26, 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	329.32	199.43	190.79	129.89	8.64
2	Eastern Grid	218.74	48.52	44.12	170.22	4.40
Total		548.06	247.95	234.91	300.11	13.04

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.
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