

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: August 18, 2022
Hours: 19:00 Hours

Date **Time** **Load(MW)**
 15-Aug-22 19:30 hrs 521.02

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.59	400kV THP - Siliguri Line - I	0.00	400kV THP_ Siliguri Line I tripped at 14:55hrs.
		Unit- II	185.06	400kV THP - Siliguri Line - II	318.55	
		Unit- III	128.62	400kV THP - Siliguri Line- IV	304.25	
		Unit- IV	128.08	400kV THP - Malbase Line - III	369.42	
		Unit- V	185.10	400kV Malbase - Siliguri Line	289.37	
		Unit- VI	185.47	-	-	
		Total	997.92	Auxiliary Consumption & Transformation Losses at Generator end	0.57%	
2	720MW MHP	Unit-I	135.24	400kV MHP - Jigmeling Line - I	273.21	400kV MHP-JLG Line II on Standby. 400kV MHP-JLG Line IV under breakdown. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	140.17	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.50	400kV MHP - Jigmeling Line - III	274.82	
		Unit-IV	140.62	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)	53.78	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	122.06	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	182.37	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	183.08	
		-	-	80MVA, 220/132kV ICT - I (HV)	39.98	
		-	-	80MVA, 220/132kV ICT - II (HV)	40.69	
		-	-	220kV Tsirang - Jigmeling Line	2.19	
-	-	132kV Gelephu - Salakati Line	6.30			
Total	551.53	Auxiliary Consumption & Transformation Losses at Generator end	0.63%			
3	336MW CHP	Unit- I	91.73	220kV CHP - Birpara Line- I	97.56	220kV MAL_Birpara Line tripped at 14:55hrs.
		Unit- II	91.05	220kV CHP - Birpara Line- II	97.65	
		Unit- III	91.47	220kV CHP - Malbase Line- III	50.59	
		Unit- IV	66.60	220kV CHP - Semtokha Line- IV	71.61	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	15.62	
		-	-	66kV CHP - Gedu Line	5.29	
		-	-	3x3MVA, 66/11kV TFR	1.24	
Total	340.85	Auxiliary Consumption & Transformation Losses at Generator end	0.38%			
4	24MW BHP (U/S)	Unit- I	11.47	220kV BHP - Semtokha Line	33.11	
		Unit- II	11.47	66kV BHP - Lobeyssa Line	25.53	
		Total	22.94	220kV BHP - Tsirang Line	5.15	
5	40MW BHP (L/S)	Unit- I	21.06	5MVA, 66/11kV TFR	0.73	
		Unit- II	20.34	30MVA ICT, 220/66kV (HV)	3.31	
		Total	41.40	Auxiliary Consumption & Transformation Losses at Generator end	-0.28%	
6	126MW DHP	Unit-I	38.81	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	38.54	220kV DHP - Dagapela Line	76.86	
		-	-	220kV Jigmeling - Dagapela Line	-24.75	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	77.35	Auxiliary Consumption & Transformation Losses at Gen. end	0.25%			
7	60MW KHP	Unit- I	16.54	132kV KHP - Nangkhoh Line	37.41	
		Unit-II	16.53	132kV KHP - Kilikhar Line	26.59	
		Unit- III	16.56	5MVA, 132/11kV TFR	0.57	
		Unit- IV	16.48	132kV Motanga - Rangia Line	29.83	
		Total	66.11	Auxiliary Consumption & Transformation Losses at Generator end	2.33%	

Note: Generation-Load Summary (MW) for August 18, 2022 at 19:00hrs.

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	1,480.46	346.14	339.14	1,107.38	7.00
2	Eastern Grid	617.64	120.94	115.90	523.64	5.04
Total		2,098.10	467.08	455.04	1,631.02	12.04

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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	1,613.92	271.62	264.32	1,260.70	7.30
2	Eastern Grid	659.25	80.56	76.99	660.29	3.57
Total		2,273.17	352.18	341.31	1,920.99	10.87

NOTE-

- 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: August 19, 2022
Hours: 09:00 Hours

Date	Time	Load(MW)
15-Aug-22	19:30 hrs	521.02

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.28	400kV THP - Siliguri Line - I	0.00	400kV THP_Siliguri Line I under breakdown.
		Unit- II	184.99	400kV THP - Siliguri Line - II	347.15	
		Unit- III	186.15	400kV THP - Siliguri Line- IV	332.10	
		Unit- IV	188.47	400kV THP - Malbase Line - III	424.41	
		Unit- V	185.97	400kV Malbase - Siliguri Line	307.91	
		Unit- VI	184.64	-	-	
		Total	1,115.50	Auxiliary Consumption & Transformation Losses at Generator end	1.06%	
2	720MW MHP	Unit-I	197.70	400kV MHP - Jigmeling Line - I	356.30	400kV MHP-JLG Line II under standby and IV under breakdown. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	197.83	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.47	400kV MHP - Jigmeling Line - III	356.30	
		Unit-IV	197.72	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)	26.20	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	172.10	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	257.30	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	258.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	31.10	
		-	-	80MVA, 220/132kV ICT - II (HV)	31.10	
		-	-	220kV Tsirang - Jigmeling Line	16.50	
-	-	132kV Gelephu - Salakati Line	7.64			
Total	728.72	Auxiliary Consumption & Transformation Losses at Generator end	2.21%			
3	336MW CHP	Unit- I	92.02	220kV CHP - Birpara Line- I	123.94	220kV CHP_MAL & 220kV MAL_BIR under breakdown.
		Unit- II	90.67	220kV CHP - Birpara Line- II	123.42	
		Unit- III	91.43	220kV CHP - Malbase Line- III	0.00	
		Unit- IV	71.97	220kV CHP - Semtokha Line- IV	73.83	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	11.07	
		-	-	66kV CHP - Gedu Line	12.67	
		-	-	3x3MVA, 66/11kV TFR	-	
Total	346.09	Auxiliary Consumption & Transformation Losses at Generator end	0.34%			
4	24MW BHP (U/S)	Unit- I	11.70	220kV BHP - Semtokha Line	21.93	
		Unit- II	11.40	66kV BHP - Lobeysa Line	23.51	
		Total	23.10	220kV BHP - Tsirang Line	18.03	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.46	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	1.30	
		Total	41.70	Auxiliary Consumption & Transformation Losses at Generator end	1.34%	
6	126MW DHP	Unit-I	37.80	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	37.50	220kV DHP - Dagapela Line	74.82	
		-	-	220kV Jigmeling - Dagapela Line	-20.50	
		-	-	5MVA, 220/33kV TFR	0.45	
Total	75.30	Auxiliary Consumption & Transformation Losses at Generator end	0.04%			
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhoh Line	42.04	
		Unit-II	16.58	132kV KHP - Kilikhar Line	23.18	
		Unit- III	16.62	5MVA, 132/11kV TFR	0.50	
		Unit- IV	16.60	132kV Motanga - Rangia Line	23.15	
		Total	66.29	Auxiliary Consumption & Transformation Losses at Generator end	0.86%	

Note: Generation-Load Summary (MW) for August 19, 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	1,601.69	330.17	316.27	1,234.52	13.90
2	Eastern Grid	795.01	113.82	97.13	718.19	16.69
Total		2,396.70	443.99	413.40	1,952.71	30.59

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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	1,638.61	263.83	255.18	1,275.58	8.65
2	Eastern Grid	658.42	71.92	58.26	685.70	13.66
Total		2,297.03	335.75	313.44	1,961.28	22.31

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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