BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

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

Date:	**August 29, 2022**
Hours:	**19:00 Hours**

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	**1020MW THP**	Unit- I	185.24	400kV THP - Siliguri Line - I	262.58	
		Unit- II	185.37	400kV THP - Siliguri Line - II	261.70	
		Unit- III	185.49	400kV THP - Siliguri Line- IV	254.16	
		Unit- IV	184.25	400kV THP - Malbase Line - III	328.31	
		Unit- V	186.07	400kV Malbase - Siliguri Line	233.70	
		Unit- VI	185.25	-	-	
		Total	**1,111.67**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.44%**	
2	**720MW MHP**	Unit-I	197.78	400kV MHP - Jigmeling Line - I	360.98	400kV MHP-JLG Line II & III on Standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	197.75	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.38	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	197.62	400kV MHP - Jigmeling Line - IV	362.29	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	73.01	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Interim)**	160.50	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Interim)**	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Direct)**	241.16	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Direct)**	240.32	
		-	-	80MVA, 220/132kV ICT - I (HV)	41.18	
		-	-	80MVA, 220/132kV ICT - II (HV)	41.97	
		-	-	220kV Tsirang - Jigmeling Line	-16.81	
		-	-	132kV Gelephu - Salakati Line	13.15	
		Total	**728.53**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.72%**	
3	**336MW CHP**	Unit- I	91.51	220kV CHP - Birpara Line- I	76.99	
		Unit- II	90.88	220kV CHP - Birpara Line- II	76.92	
		Unit- III	91.49	220kV CHP - Malbase Line- III	118.54	
		Unit- IV	75.31	220kV CHP - Semtokha Line- IV	53.23	
		-	-	220kV Malbase - Birpara Line	34.29	
		-	-	66kV CHP - Chumdo Line	14.98	
		-	-	66kV CHP - Gedu Line	6.26	
		-	-	3x3MVA, 66/11kV TFR	1.41	
		Total	**349.19**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.25%**	
4	**24MW BHP (U/S)**	Unit- I	12.40	220kV BHP - Semtokha Line	51.90	
		Unit- II	12.10	66kV BHP - Lobeysa Line	27.48	
		Total	**24.50**	220kV BHP - Tsirang Line	-14.44	
5	**40MW BHP (L/S)**	Unit- I	20.50	5MVA, 66/11kV TFR	0.42	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	4.23	
		Total	**41.70**	**Auxiliary Consumption & Transformation Losses at Generator end**	**1.27%**	
6	**126MW DHP**	Unit-I	41.33	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	41.00	220kV DHP - Dagapela Line	81.83	
		-		220kV Jigmeling - Dagapela Line	-26.65	
		-	-	5MVA, 220/33kV TFR	0.49	
		Total	**82.33**	**Auxiliary Consumption & Transformation Losses at Gen. end**	**0.01%**	
7	**60MW KHP**	Unit- I	16.56	132kV KHP - Nangkhor Line	37.49	
		Unit-II	16.48	132kV KHP - Kilikhar Line	27.36	
		Unit- III	16.55	5MVA, 132/11kV TFR	0.50	
		Unit- IV	16.47	132kV Motanga - Rangia Line	33.94	
		Total	**66.06**	**Auxiliary Consumption & Transformation Losses at Generator end**	**1.07%**	

Note: Generation-Load Summary (MW) for August 29, 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**	1,609.39	399.21	392.58	1,200.34	6.63
2	**Eastern Grid**	794.59	115.36	109.39	689.07	5.97
Total		**2,403.98**	**514.57**	**501.97**	**1,889.41**	**12.60**

Note: Generation-Load Summary for August 29, 2021 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**	1,657.65	313.00	301.03	1,243.95	11.97
2	**Eastern Grid**	853.71	77.82	64.02	876.59	13.80
Total		**2,511.36**	**390.82**	**365.05**	**2,120.54**	**25.77**

NOTE- MAT 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:	August 30, 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	185.81	400kV THP - Siliguri Line - I	341.30	400kV Malbase_Siliguri under shutdown.
		Unit- II	183.15	400kV THP - Siliguri Line - II	338.31	
		Unit- III	185.79	400kV THP - Siliguri Line- IV	332.65	
		Unit- IV	186.70	400kV THP - Malbase Line - III	94.75	
		Unit- V	186.11	400kV Malbase - Siliguri Line	0.00	
		Unit- VI	185.48	-	-	
		Total	**1,113.04**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.54%**	
2	720MW MHP	Unit-I	197.85	400kV MHP - Jigmeling Line - I	360.77	400kV MHP-JLG Line II & III under standby 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	197.74	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.38	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	197.64	400kV MHP - Jigmeling Line - IV	362.37	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	38.38	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Interim)**	169.49	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Interim)**	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Direct)**	252.63	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Direct)**	253.34	
		-	-	80MVA, 220/132kV ICT - I (HV)	29.07	
		-	-	80MVA, 220/132kV ICT - II (HV)	29.64	
		-	-	220kV Tsirang - Jigmeling Line	-7.83	
		-	-	132kV Gelephu - Salakati Line	9.66	
		Total	**728.61**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.75%**	
3	336MW CHP	Unit- I	91.51	220kV CHP - Birpara Line- I	80.81	
		Unit- II	90.88	220kV CHP - Birpara Line- II	80.75	
		Unit- III	91.49	220kV CHP - Malbase Line- III	122.74	
		Unit- IV	75.31	220kV CHP - Semtokha Line- IV	46.65	
		-	-	220kV Malbase - Birpara Line	36.35	
		-	-	66kV CHP - Chumdo Line	11.40	
		-	-	66kV CHP - Gedu Line	5.78	
		-	-	3x3MVA, 66/11kV TFR	0.91	
		Total	**349.19**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.04%**	
4	24MW BHP (U/S)	Unit- I	12.10	220kV BHP - Semtokha Line	45.80	
		Unit- II	12.00	66kV BHP - Lobeysa Line	24.67	
		Total	**24.10**	220kV BHP - Tsirang Line	-5.97	
5	40MW BHP (L/S)	Unit- I	20.40	5MVA, 66/11kV TFR	0.38	
		Unit- II	20.20	30MVA ICT, 220/66kV (HV)	1.70	
		Total	**40.60**	**Auxiliary Consumption & Transformation Losses at Generator end**	**-0.28%**	
6	126MW DHP	Unit-I	42.41	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	42.01	220kV DHP - Dagapela Line	83.93	
		-	-	220kV Jigmeling - Dagapela Line	-29.45	
		-	-	5MVA, 220/33kV TFR	0.45	
		Total	**84.42**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.05%**	
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhor Line	42.32	
		Unit-II	16.57	132kV KHP - Kilikhar Line	22.42	
		Unit- III	16.30	5MVA, 132/11kV TFR	0.35	
		Unit- IV	16.47	132kV Motanga - Rangia Line	26.88	
		Total	**65.84**	**Auxiliary Consumption & Transformation Losses at Generator end**	**1.14%**	

Note: Generation-Load Summary (MW) for August 30, 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	1,611.35	379.56	373.52	1,210.17	6.04
2	Eastern Grid	794.45	104.07	97.85	712.00	6.22
Total		**2,405.80**	**483.63**	**471.37**	**1,922.17**	**12.26**

Note: Generation-Load Summary for August 30, 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	1,674.53	290.27	280.16	1,279.92	10.11
2	Eastern Grid	853.17	74.13	68.83	883.38	5.30
Total		**2,527.70**	**364.40**	**348.99**	**2,163.30**	**15.41**

Notes: BHP & MAT 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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