BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	August 26, 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	136.37	400kV THP - Siliguri Line - I	207.31	
		Unit- II	148.33	400kV THP - Siliguri Line - II	206.64	
		Unit- III	137.84	400kV THP - Siliguri Line- IV	201.35	
		Unit- IV	139.37	400kV THP - Malbase Line - III	254.87	
		Unit- V	157.09	400kV Malbase - Siliguri Line	187.75	
		Unit- VI	158.22	-	-	
		Total	**877.22**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.80%**	
2	720MW MHP	Unit-I	120.27	400kV MHP - Jigmeling Line - I	256.06	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	130.24	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.58	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	130.57	400kV MHP - Jigmeling Line - IV	257.22	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	64.97	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Interim)**	111.54	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Interim)**	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Direct)**	166.26	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Direct)**	165.02	
		-	-	80MVA, 220/132kV ICT - I (HV)	41.23	
		-	-	80MVA, 220/132kV ICT - II (HV)	42.05	
		-	-	220kV Tsirang - Jigmeling Line	12.78	
		-	-	132kV Gelephu - Salakati Line	12.46	
		Total	**516.66**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.65%**	
3	336MW CHP	Unit- I	91.51	220kV CHP - Birpara Line- I	97.02	220kV MAL_Birpara Line tripped at 18:34hrs.
		Unit- II	90.88	220kV CHP - Birpara Line- II	96.50	
		Unit- III	91.49	220kV CHP - Malbase Line- III	85.02	
		Unit- IV	75.31	220kV CHP - Semtokha Line- IV	51.09	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	12.60	
		-	-	66kV CHP - Gedu Line	5.62	
		-	-	3x3MVA, 66/11kV TFR	1.47	
		Total	**349.19**	**Auxiliary Consumption & Transformation Losses at Generator end**	**-0.04%**	
4	24MW BHP (U/S)	Unit- I	17.80	220kV BHP - Semtokha Line	21.70	
		Unit- II	17.80	66kV BHP - Lobeysa Line	19.51	
		Total	**35.60**	220kV BHP - Tsirang Line	15.48	
5	40MW BHP (L/S)	Unit- I	11.80	5MVA, 66/11kV TFR	0.88	
		Unit- II	11.70	30MVA ICT, 220/66kV (HV)	2.37	
		Total	**23.50**	**Auxiliary Consumption & Transformation Losses at Generator end**	**2.59%**	
6	126MW DHP	Unit-I	30.28	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	31.98	220kV DHP - Dagapela Line	61.80	
		-		220kV Jigmeling - Dagapela Line	-6.14	
		-	-	5MVA, 220/33kV TFR	0.20	
		Total	**62.26**	**Auxiliary Consumption & Transformation Losses at Gen. end**	**0.42%**	
7	60MW KHP	Unit- I	16.48	132kV KHP - Nangkhor Line	36.64	
		Unit-II	16.50	132kV KHP - Kilikhar Line	28.18	
		Unit- III	16.56	5MVA, 132/11kV TFR	0.49	
		Unit- IV	16.60	132kV Motanga - Rangia Line	35.18	
		Total	**66.14**	**Auxiliary Consumption & Transformation Losses at Generator end**	**1.25%**	

Note: Generation-Load Summary (MW) for August 26, 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	1,347.77	332.28	323.57	996.57	8.71
2	Eastern Grid	582.80	111.26	107.05	490.46	4.21
Total		**1,930.57**	**443.54**	**430.62**	**1,487.03**	**12.92**

Note: Generation-Load Summary for August 26, 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	1,670.95	291.63	283.03	1,282.47	8.60
2	Eastern Grid	851.60	81.46	76.18	866.99	5.28
Total		**2,522.55**	**373.09**	**359.21**	**2,149.46**	**13.88**

NOTE- MAT, MHPA & 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:	August 27, 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	139.16	400kV THP - Siliguri Line - I	197.23	
		Unit- II	148.57	400kV THP - Siliguri Line - II	194.25	
		Unit- III	138.30	400kV THP - Siliguri Line- IV	190.63	
		Unit- IV	139.55	400kV THP - Malbase Line - III	233.35	
		Unit- V	97.39	400kV Malbase - Siliguri Line	181.08	
		Unit- VI	159.12	-	-	
		Total	**822.09**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.81%**	
2	720MW MHP	Unit-I	136.86	400kV MHP - Jigmeling Line - I	276.04	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	140.14	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.38	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	140.57	400kV MHP - Jigmeling Line - IV	276.12	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	59.85	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Interim)**	123.97	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Interim)**	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Direct)**	185.42	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Direct)**	186.60	
		-	-	80MVA, 220/132kV ICT - I (HV)	29.07	
		-	-	80MVA, 220/132kV ICT - II (HV)	29.60	
		-	-	220kV Tsirang - Jigmeling Line	8.16	
		-	-	132kV Gelephu - Salakati Line	2.98	
		Total	**552.95**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.14%**	
3	336MW CHP	Unit- I	91.51	220kV CHP - Birpara Line- I	74.84	220kV MAL_BIR line under breakdown.
		Unit- II	90.88	220kV CHP - Birpara Line- II	74.67	
		Unit- III	91.49	220kV CHP - Malbase Line- III	124.39	
		Unit- IV	75.31	220kV CHP - Semtokha Line- IV	56.66	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	11.77	
		-	-	66kV CHP - Gedu Line	5.53	
		-	-	3x3MVA, 66/11kV TFR	0.86	
		Total	**349.19**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.13%**	
4	24MW BHP (U/S)	Unit- I	9.20	220kV BHP - Semtokha Line	36.73	
		Unit- II	9.20	66kV BHP - Lobeysa Line	23.02	
		Total	**18.40**	220kV BHP - Tsirang Line	-6.39	
5	40MW BHP (L/S)	Unit- I	17.54	5MVA, 66/11kV TFR	0.50	
		Unit- II	17.71	30MVA ICT, 220/66kV (HV)	4.90	
		Total	**35.25**	**Auxiliary Consumption & Transformation Losses at Generator end**	**-0.39%**	
6	126MW DHP	Unit-I	56.20	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	4.98	220kV DHP - Dagapela Line	60.74	
		-	-	220kV Jigmeling - Dagapela Line	-6.27	
		-	-	5MVA, 220/33kV TFR	0.40	
		Total	**61.18**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.07%**	
7	60MW KHP	Unit- I	16.39	132kV KHP - Nangkhor Line	41.33	
		Unit-II	16.66	132kV KHP - Kilikhar Line	23.54	
		Unit- III	16.53	5MVA, 132/11kV TFR	0.40	
		Unit- IV	16.41	132kV Motanga - Rangia Line	34.60	
		Total	**65.99**	**Auxiliary Consumption & Transformation Losses at Generator end**	**1.09%**	

Note: Generation-Load Summary (MW) for August 27, 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	1,286.11	358.98	352.05	912.70	6.93
2	Eastern Grid	618.94	99.80	98.29	533.57	1.51
Total		**1,905.05**	**458.78**	**450.34**	**1,446.27**	**8.44**

Note: Generation-Load Summary for August 27, 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	1,671.77	290.26	278.36	1,281.91	11.90
2	Eastern Grid	852.01	65.17	51.17	886.44	14.00
Total		**2,523.78**	**355.43**	**329.53**	**2,168.35**	**25.90**

Notes: 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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