BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	October 14, 2022
Hours:	19:00 Hours

Date	Time	Load(MW)
30-Aug-22	19:23 hrs	536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.51	400kV THP - Siliguri Line - I	261.87	
		Unit- II	184.21	400kV THP - Siliguri Line - II	260.29	
		Unit- III	185.46	400kV THP - Siliguri Line- IV	253.92	
		Unit- IV	184.46	400kV THP - Malbase Line - III	326.21	
		Unit- V	184.79	400kV Malbase - Siliguri Line	235.76	
		Unit- VI	185.50	-	-	
		Total	**1,109.93**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.69%**	
2	720MW MHP	Unit-I	130.18	400kV MHP - Jigmeling Line - I	236.30	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	130.16	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	120.78	400kV MHP - Jigmeling Line - III	237.73	
		Unit-IV	150.21	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	53.81	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	8.88	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Interim)**	99.64	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Interim)**	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Direct)**	148.98	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Direct)**	149.72	
		-	-	80MVA, 220/132kV ICT - I (HV)	18.11	
		-	-	80MVA, 220/132kV ICT - II (HV)	18.48	
		-	-	220kV Tsirang - Jigmeling Line	-20.74	
		-	-	132kV Gelephu - Salakati Line	22.33	
		Total	**531.33**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.66%**	
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	74.88	
		Unit- II	91.18	220kV CHP - Birpara Line- II	74.98	
		Unit- III	91.63	220kV CHP - Malbase Line- III	106.13	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	80.80	
		-	-	220kV Malbase - Birpara Line	42.02	
		-	-	66kV CHP - Chumdo Line	1.11	
		-	-	66kV CHP - Gedu Line	10.86	
		-	-	3x3MVA, 66/11kV TFR	1.54	
		Total	**349.34**	**Auxiliary Consumption & Transformation Losses at Generator end**	**-0.27%**	
4	24MW BHP (U/S)	Unit- I	11.20	220kV BHP - Semtokha Line	50.30	
		Unit- II	10.90	66kV BHP - Lobeysa Line	28.51	
		Total	**22.10**	220kV BHP - Tsirang Line	-18.12	
5	40MW BHP (L/S)	Unit- I	19.90	5MVA, 66/11kV TFR	0.58	
		Unit- II	19.90	30MVA ICT, 220/66kV (HV)	7.67	
		Total	**39.80**	**Auxiliary Consumption & Transformation Losses at Generator end**	**1.02%**	
6	126MW DHP	Unit-I	40.37	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	40.51	220kV DHP - Dagapela Line	80.43	
		-		220kV Jigmeling - Dagapela Line	-47.92	
		-	-	5MVA, 220/33kV TFR	0.20	
		Total	**80.88**	**Auxiliary Consumption & Transformation Losses at Gen. end**	**0.31%**	
7	60MW KHP	Unit- I	16.55	132kV KHP - Nangkhor Line	36.75	
		Unit-II	16.50	132kV KHP - Kilikhar Line	28.04	
		Unit- III	16.53	5MVA, 132/11kV TFR	0.60	
		Unit- IV	16.54	132kV Motanga - Rangia Line	48.72	
		Total	**66.12**	**Auxiliary Consumption & Transformation Losses at Generator end**	**1.10%**	

Note: Generation-Load Summary (MW) for October 14, 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	1,602.05	371.15	363.59	1,203.72	7.56
2	Eastern Grid	597.45	155.24	151.02	469.39	4.22
Total		**2,199.50**	**526.39**	**514.61**	**1,673.11**	**11.78**

Note: Generation-Load Summary for October 14, 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	924.78	315.26	310.95	575.09	4.31
2	Eastern Grid	384.05	69.44	66.88	349.04	2.56
Total		**1,308.83**	**384.70**	**377.83**	**924.13**	**6.87**

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	Time	Load(MW)
30-Aug-22	19:23 hrs	536.69

Date:	October 15, 2022
Hours:	09:00 Hours

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	186.31	400kV THP - Siliguri Line - I	219.71	
		Unit- II	182.71	400kV THP - Siliguri Line - II	217.42	
		Unit- III	98.15	400kV THP - Siliguri Line- IV	211.49	
		Unit- IV	79.60	400kV THP - Malbase Line - III	262.17	
		Unit- V	184.77	400kV Malbase - Siliguri Line	200.06	
		Unit- VI	186.08	-	-	
		Total	**917.62**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.74%**	
2	720MW MHP	Unit-I	90.11	400kV MHP - Jigmeling Line - I	191.11	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	110.41	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	90.50	400kV MHP - Jigmeling Line - III	192.45	
		Unit-IV	150.21	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	54.85	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-9.21	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Interim)**	97.33	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Interim)**	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Direct)**	145.60	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Direct)**	146.94	
		-	-	80MVA, 220/132kV ICT - I (HV)	14.78	
		-	-	80MVA, 220/132kV ICT - II (HV)	15.11	
		-	-	220kV Tsirang - Jigmeling Line	-6.28	
		-	-	132kV Gelephu - Salakati Line	20.35	
		Total	**441.23**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.64%**	
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	69.87	
		Unit- II	91.18	220kV CHP - Birpara Line- II	69.52	
		Unit- III	91.63	220kV CHP - Malbase Line- III	122.14	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	76.00	
		-	-	220kV Malbase - Birpara Line	19.38	
		-	-	66kV CHP - Chumdo Line	0.42	
		-	-	66kV CHP - Gedu Line	10.58	
		-	-	3x3MVA, 66/11kV TFR	0.62	
		Total	**349.34**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.05%**	
4	24MW BHP (U/S)	Unit- I	10.90	220kV BHP - Semtokha Line	36.00	
		Unit- II	10.60	66kV BHP - Lobeysa Line	24.82	
		Total	**21.50**	220kV BHP - Tsirang Line	-4.14	
5	40MW BHP (L/S)	Unit- I	18.00	5MVA, 66/11kV TFR	0.41	
		Unit- II	18.00	30MVA ICT, 220/66kV (HV)	4.12	
		Total	**36.00**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.71%**	
6	126MW DHP	Unit-I	38.35	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	38.71	220kV DHP - Dagapela Line	76.65	
		-		220kV Jigmeling - Dagapela Line	-44.93	
		-	-	5MVA, 220/33kV TFR	0.30	
		Total	**77.06**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.14%**	
7	60MW KHP	Unit- I	16.59	132kV KHP - Nangkhor Line	40.14	
		Unit-II	16.58	132kV KHP - Kilikhar Line	24.83	
		Unit- III	16.44	5MVA, 132/11kV TFR	0.44	
		Unit- IV	16.52	132kV Motanga - Rangia Line	48.19	
		Total	**66.13**	**Auxiliary Consumption & Transformation Losses at Generator end**	**1.09%**	

Note: Generation-Load Summary (MW) for October 15, 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	1,401.52	355.42	347.88	1,007.45	7.54
2	Eastern Grid	507.36	87.60	84.06	458.41	3.54
Total		**1,908.88**	**443.02**	**431.94**	**1,465.86**	**11.08**

Note: Generation-Load Summary for October 15, 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	867.94	247.16	258.16	576.98	-11.00
2	Eastern Grid	387.46	59.74	57.31	371.52	2.43
Total		**1,255.40**	**306.90**	**315.47**	**948.50**	**-8.57**

Note: Motanga 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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