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 11, 2022**
Hours:	**19:00 Hours**

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	**1020MW THP**	Unit- I	185.85	400kV THP - Siliguri Line - I	263.25	
		Unit- II	184.13	400kV THP - Siliguri Line - II	262.81	
		Unit- III	185.06	400kV THP - Siliguri Line- IV	255.47	
		Unit- IV	183.81	400kV THP - Malbase Line - III	322.84	
		Unit- V	185.66	400kV Malbase - Siliguri Line	238.28	
		Unit- VI	186.40	-	-	
		Total	**1,110.91**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.59%**	
2	**720MW MHP**	Unit-I	160.29	400kV MHP - Jigmeling Line - I	273.53	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	160.28	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.48	400kV MHP - Jigmeling Line - III	275.07	
		Unit-IV	165.66	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	67.63	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	3.85	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Interim)**	134.93	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Interim)**	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Direct)**	201.21	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Direct)**	201.97	
		-	-	80MVA, 220/132kV ICT - I (HV)	15.52	
		-	-	80MVA, 220/132kV ICT - II (HV)	15.82	
		-	-	220kV Tsirang - Jigmeling Line	-28.18	
		-	-	132kV Gelephu - Salakati Line	29.91	
		Total	**621.71**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.88%**	
3	**336MW CHP**	Unit- I	91.27	220kV CHP - Birpara Line- I	77.27	
		Unit- II	91.18	220kV CHP - Birpara Line- II	77.15	
		Unit- III	91.63	220kV CHP - Malbase Line- III	111.66	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	71.97	
		-	-	220kV Malbase - Birpara Line	40.02	
		-	-	66kV CHP - Chumdo Line	1.11	
		-	-	66kV CHP - Gedu Line	8.49	
		-	-	3x3MVA, 66/11kV TFR	1.60	
		Total	**349.34**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.03%**	
4	**24MW BHP (U/S)**	Unit- I	11.40	220kV BHP - Semtokha Line	58.44	
		Unit- II	11.10	66kV BHP - Lobeysa Line	29.21	
		Total	**22.50**	220kV BHP - Tsirang Line	-26.22	
5	**40MW BHP (L/S)**	Unit- I	20.10	5MVA, 66/11kV TFR	0.61	
		Unit- II	20.00	30MVA ICT, 220/66kV (HV)	7.90	
		Total	**40.10**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.89%**	
6	**126MW DHP**	Unit-I	44.38	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	45.05	220kV DHP - Dagapela Line	88.97	
		-		220kV Jigmeling - Dagapela Line	-56.67	
		-	-	5MVA, 220/33kV TFR	0.40	
		Total	**89.43**	**Auxiliary Consumption & Transformation Losses at Gen. end**	**0.07%**	
7	**60MW KHP**	Unit- I	16.52	132kV KHP - Nangkhor Line	0.69	
		Unit-II	16.53	132kV KHP - Kilikhar Line	64.06	
		Unit- III	16.45	5MVA, 132/11kV TFR	0.55	
		Unit- IV	16.48	132kV Motanga - Rangia Line	21.71	
		Total	**65.98**	**Auxiliary Consumption & Transformation Losses at Generator end**	**1.03%**	

Note: Generation-Load Summary (MW) for October 11, 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**	1,612.28	369.54	362.29	1,214.25	7.25
2	**Eastern Grid**	687.69	126.45	120.29	589.73	6.16
Total		**2,299.97**	**495.99**	**482.58**	**1,803.98**	**13.41**

Note: Generation-Load Summary for October 11, 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**	1,050.18	312.11	309.19	692.92	2.92
2	**Eastern Grid**	406.28	67.14	63.71	384.29	3.43
Total		**1,456.46**	**379.25**	**372.90**	**1,077.21**	**6.35**

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 12, 2022
Hours:	09:00 Hours

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.43	400kV THP - Siliguri Line - I	268.70	
		Unit- II	182.97	400kV THP - Siliguri Line - II	266.59	
		Unit- III	184.92	400kV THP - Siliguri Line- IV	260.27	
		Unit- IV	184.26	400kV THP - Malbase Line - III	306.23	
		Unit- V	185.50	400kV Malbase - Siliguri Line	247.77	
		Unit- VI	186.51	-	-	
		Total	**1,109.59**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.70%**	
2	720MW MHP	Unit-I	197.74	400kV MHP - Jigmeling Line - I	332.59	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	197.63	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.47	400kV MHP - Jigmeling Line - III	334.64	
		Unit-IV	197.24	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	56.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-37.54	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Interim)**	173.97	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Interim)**	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Direct)**	260.24	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Direct)**	261.21	
		-	-	80MVA, 220/132kV ICT - I (HV)	10.22	
		-	-	80MVA, 220/132kV ICT - II (HV)	10.36	
		-	-	220kV Tsirang - Jigmeling Line	-34.26	
		-	-	132kV Gelephu - Salakati Line	27.74	
		Total	**728.08**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.67%**	
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	84.13	
		Unit- II	91.18	220kV CHP - Birpara Line- II	84.30	
		Unit- III	91.63	220kV CHP - Malbase Line- III	128.52	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	43.13	
		-	-	220kV Malbase - Birpara Line	38.89	
		-	-	66kV CHP - Chumdo Line	0.66	
		-	-	66kV CHP - Gedu Line	7.75	
		-	-	3x3MVA, 66/11kV TFR	1.07	
		Total	**349.34**	**Auxiliary Consumption & Transformation Losses at Generator end**	**-0.06%**	
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	70.60	
		Unit- II	12.10	66kV BHP - Lobeysa Line	27.39	
		Total	**24.40**	220kV BHP - Tsirang Line	-32.57	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.39	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	3.94	
		Total	**41.60**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.29%**	
6	126MW DHP	Unit-I	63.66	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	62.57	220kV DHP - Dagapela Line	125.61	
		-		220kV Jigmeling - Dagapela Line	-93.41	
		-	-	5MVA, 220/33kV TFR	0.20	
		Total	**126.23**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.33%**	
7	60MW KHP	Unit- I	16.48	132kV KHP - Nangkhor Line	13.78	
		Unit-II	16.46	132kV KHP - Kilikhar Line	51.04	
		Unit- III	16.13	5MVA, 132/11kV TFR	0.38	
		Unit- IV	16.56	132kV Motanga - Rangia Line	13.61	
		Total	**65.63**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.66%**	

Note: Generation-Load Summary (MW) for October 12, 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	1,651.16	341.36	333.17	1,250.65	8.19
2	Eastern Grid	793.71	116.09	110.81	736.77	5.28
Total		**2,444.87**	**457.45**	**443.98**	**1,987.42**	**13.47**

Note: Generation-Load Summary for October 12, 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	992.33	300.20	294.23	639.89	5.97
2	Eastern Grid	416.52	59.30	56.42	409.46	2.88
Total		**1,408.85**	**359.50**	**350.65**	**1,049.35**	**8.85**

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.
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