BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	July 9, 2022
Hours:	19:00 Hours

Date	Time	Load(MW)
12-Jan-22	18:00hrs	492.25

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	175.41	400kV THP - Siliguri Line - I	0.00	Unit V on breakdown. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	97.77	400kV THP - Siliguri Line - II	0.00	
		Unit- III	184.87	400kV THP - Siliguri Line- IV	352.26	
		Unit- IV	166.74	400kV THP - Malbase Line - III	347.17	
		Unit- V	0.00	400kV Malbase - Siliguri Line	349.79	
		Unit- VI	79.22	-	-	
		Total	**704.01**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.65%**	
2	720MW MHP	Unit-I	170.20	400kV MHP - Jigmeling Line - I	253.17	Unit III under shutdown. 400kV MHP-JLG line II & 400kV MHP-JLG Line IV on Standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line I (Interim) on standby. .
		Unit-II	170.11	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	254.61	
		Unit-IV	170.65	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)	40.32	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Interim)**	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Interim)**	113.44	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Direct)**	173.17	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Direct)**	173.44	
		-	-	80MVA, 220/132kV ICT - I (HV)	27.01	
		-	-	80MVA, 220/132kV ICT - II (HV)	27.54	
		-	-	220kV Tsirang - Jigmeling Line	50.72	
		-	-	132kV Gelephu - Salakati Line	16.54	
		Total	**510.96**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.62%**	
3	336MW CHP	Unit- I	90.98	220kV CHP - Birpara Line- I	47.40	Unit IV under Shutdown.
		Unit- II	88.97	220kV CHP - Birpara Line- II	47.63	
		Unit- III	91.33	220kV CHP - Malbase Line- III	118.28	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	38.99	
		-	-	220kV Malbase - Birpara Line	-13.12	
		-	-	66kV CHP - Chumdo Line	11.77	
		-	-	66kV CHP - Gedu Line	5.22	
		-	-	3x3MVA, 66/11kV TFR	1.08	
		Total	**271.28**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.34%**	
4	24MW BHP (U/S)	Unit- I	10.50	220kV BHP - Semtokha Line	52.81	
		Unit- II	10.10	66kV BHP - Lobeysa Line	23.62	
		Total	**20.60**	220kV BHP - Tsirang Line	-18.27	
5	40MW BHP (L/S)	Unit- I	18.87	5MVA, 66/11kV TFR	0.51	
		Unit- II	19.49	30MVA ICT, 220/66kV (HV)	4.05	
		Total	**38.36**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.49%**	
6	126MW DHP	Unit-I	36.32	220kV DHP - Tsirang Line	71.82	220kV DHP_Dagapela Line on Standby.
		Unit-II	35.98	220kV DHP - Dagapela Line	0.00	
		-		220kV Jigmeling - Dagapela Line	35.30	
		-	-	5MVA, 220/33kV TFR	0.40	
		Total	**72.30**	**Auxiliary Consumption & Transformation Losses at Gen. end**	**0.11%**	
7	60MW KHP	Unit- I	16.55	132kV KHP - Nangkhor Line	18.52	
		Unit-II	16.53	132kV KHP - Kilikhar Line	46.63	
		Unit- III	16.45	5MVA, 132/11kV TFR	0.49	
		Unit- IV	16.57	132kV Motanga - Rangia Line	16.54	
		Total	**66.10**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.70%**	

Note: Generation-Load Summary (MW) for July 09, 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	1,106.55	271.87	266.01	783.96	5.86
2	Eastern Grid	577.06	134.65	131.01	493.13	3.64
Total		**1,683.61**	**406.52**	**397.02**	**1,277.09**	**9.50**

Note: Generation-Load Summary for July 09, 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	1,667.51	236.84	228.86	1,308.04	7.98
2	Eastern Grid	659.30	64.49	60.32	717.44	4.17
Total		**2,326.81**	**301.33**	**289.18**	**2,025.48**	**12.15**

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

Date:	July 10, 2022
Hours:	09:00 Hours

Coincidental Maximum Load

Date	Time	Load(MW)
12-Jan-22	18:00hrs	492.25

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	166.52	400kV THP - Siliguri Line - I	0.00	Unit V on standby. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	97.61	400kV THP - Siliguri Line - II	0.00	
		Unit- III	184.35	400kV THP - Siliguri Line- IV	348.20	
		Unit- IV	109.16	400kV THP - Malbase Line - III	343.43	
		Unit- V	0.00	400kV Malbase - Siliguri Line	345.34	
		Unit- VI	139.59	-	-	
		Total	**697.23**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.80%**	
2	720MW MHP	Unit-I	169.90	400kV MHP - Jigmeling Line - I	252.40	Unit III under shutdown. 400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line I (Interim) on standby
		Unit-II	169.80	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	254.20	
		Unit-IV	170.30	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)	45.90	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Interim)**	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Interim)**	111.30	
		-	-	400kV Jigmeling - Alipurduar Line - I **(Direct)**	170.30	
		-	-	400kV Jigmeling - Alipurduar Line - II **(Direct)**	170.80	
		-	-	80MVA, 220/132kV ICT - I (HV)	24.50	
		-	-	80MVA, 220/132kV ICT - II (HV)	25.00	
		-	-	220kV Tsirang - Jigmeling Line	38.90	
		-	-	132kV Gelephu - Salakati Line	13.50	
		Total	**510.00**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.67%**	
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	43.50	Unit IV under Shutdown.
		Unit- II	89.14	220kV CHP - Birpara Line- II	43.70	
		Unit- III	91.34	220kV CHP - Malbase Line- III	122.45	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	43.21	
		-	-	220kV Malbase - Birpara Line	-23.21	
		-	-	66kV CHP - Chumdo Line	11.59	
		-	-	66kV CHP - Gedu Line	4.84	
		-	-	3x3MVA, 66/11kV TFR	1.00	
		Total	**271.75**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.54%**	
4	24MW BHP (U/S)	Unit- I	9.90	220kV BHP - Semtokha Line	50.80	
		Unit- II	9.50	66kV BHP - Lobeysa Line	23.14	
		Total	**19.40**	220kV BHP - Tsirang Line	-19.46	
5	40MW BHP (L/S)	Unit- I	17.90	5MVA, 66/11kV TFR	0.42	
		Unit- II	17.90	30MVA ICT, 220/66kV (HV)	4.63	
		Total	**35.80**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.54%**	
6	126MW DHP	Unit-I	60.42	220kV DHP - Tsirang Line	59.98	Unit-II on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	35.10	
		-	-	5MVA, 220/33kV TFR	0.43	
		Total	**60.42**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.02%**	
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhor Line	52.27	
		Unit-II	16.50	132kV KHP - Kilikhar Line	12.96	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.44	
		Unit- IV	16.50	132kV Motanga - Rangia Line	16.70	
		Total	**66.00**	**Auxiliary Consumption & Transformation Losses at Generator end**	**0.50%**	

Note: Generation-Load Summary (MW) for July 10, 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	1,084.60	288.17	280.80	757.53	7.37
2	Eastern Grid	576.00	132.30	128.57	482.60	3.73
Total		**1,660.60**	**420.47**	**409.37**	**1,240.13**	**11.10**

Note: Generation-Load Summary for July 10, 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	1,643.65	280.52	257.65	1,251.93	22.87
2	Eastern Grid	659.37	60.37	56.76	710.20	3.61
Total		**2,303.02**	**340.89**	**314.41**	**1,962.13**	**26.48**

NOTE: KHP 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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