

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	July 16, 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	185.30	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I under breakdown.
		Unit- II	69.23	400kV THP - Siliguri Line - II	201.41	
		Unit- III	79.18	400kV THP - Siliguri Line - IV	193.39	
		Unit- IV	78.91	400kV THP - Malbase Line - III	269.23	
		Unit- V	185.77	400kV Malbase - Siliguri Line	176.00	
		Unit- VI	69.87	-	-	
		Total	668.26	Auxiliary Consumption & Transformation Losses at Generator end	0.63%	
2	720MW MHP	Unit-I	144.82	400kV MHP - Jigmeling Line - I	215.57	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	144.78	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	217.03	
		Unit-IV	145.18	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)	90.29	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	82.17	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	126.65	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	126.97	
		-	-	80MVA, 220/132kV ICT - I (HV)	34.03	
		-	-	80MVA, 220/132kV ICT - II (HV)	34.72	
		-	-	220kV Tsirang - Jigmeling Line	25.41	
-	-	132kV Gelephu - Salakati Line	6.40			
Total	434.78	Auxiliary Consumption & Transformation Losses at Generator end	0.50%			
3	336MW CHP	Unit- I	91.74	220kV CHP - Birpara Line- I	57.91	Unit IV under Shutdown.
		Unit- II	91.22	220kV CHP - Birpara Line- II	57.82	
		Unit- III	91.45	220kV CHP - Malbase Line- III	82.59	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	55.14	
		-	-	220kV Malbase - Birpara Line	31.68	
		-	-	66kV CHP - Chumdo Line	13.41	
		-	-	66kV CHP - Gedu Line	4.28	
		-	-	3x3MVA, 66/11kV TFR	1.19	
Total	274.41	Auxiliary Consumption & Transformation Losses at Generator end	0.75%			
4	24MW BHP (U/S)	Unit- I	7.30	220kV BHP - Semtokha Line	39.00	
		Unit- II	7.30	66kV BHP - Lobeyasa Line	21.05	
		Total	14.60	220kV BHP - Tsirang Line	-17.53	
5	40MW BHP (L/S)	Unit- I	14.82	5MVA, 66/11kV TFR	0.60	
		Unit- II	14.54	30MVA ICT, 220/66kV (HV)	7.60	
		Total	29.36	Auxiliary Consumption & Transformation Losses at Generator end	1.91%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	48.64	DHP unit I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	48.98	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	45.43	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	48.98	Auxiliary Consumption & Transformation Losses at Gen. end	0.08%			
7	60MW KHP	Unit- I	16.15	132kV KHP - Nangkhoh Line	39.30	
		Unit-II	16.41	132kV KHP - Kilikhar Line	25.34	
		Unit- III	16.56	5MVA, 132/11kV TFR	0.47	
		Unit- IV	16.63	132kV Motanga - Rangia Line	34.98	
		Total	65.75	Auxiliary Consumption & Transformation Losses at Generator end	0.97%	

Note: Generation-Load Summary (MW) for July 16, 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	1,035.61	291.99	284.81	718.21	7.18
2	Eastern Grid	500.53	148.77	145.95	377.17	2.82
Total		1,536.14	440.76	430.76	1,095.38	10.00

Note: Generation-Load Summary for July 16, 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	1,661.36	257.91	253.10	1,298.56	4.81
2	Eastern Grid	658.86	80.78	76.28	682.97	4.50
Total		2,320.22	338.69	329.38	1,981.53	9.31

NOTES:

- 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:
 - 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.
 - The clocks of all the locations are not synchronized.
- 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:	July 17, 2022
Hours:	09:00 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	184.87	400kV THP - Siliguri Line - I	0.00	400kV THP-Siliguri line I under breakdown.
		Unit- II	69.00	400kV THP - Siliguri Line - II	241.36	
		Unit- III	186.26	400kV THP - Siliguri Line- IV	229.31	
		Unit- IV	78.98	400kV THP - Malbase Line - III	298.69	
		Unit- V	184.35	400kV Malbase - Siliguri Line	213.82	
		Unit- VI	69.99	-	-	
		Total	773.45	Auxiliary Consumption & Transformation Losses at Generator end	0.53%	
2	720MW MHP	Unit-I	159.88	400kV MHP - Jigmeling Line - I	233.00	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	154.90	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	234.40	
		Unit-IV	155.25	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)	72.80	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	90.90	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	144.65	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	146.13	
		-	-	80MVA, 220/132kV ICT - I (HV)	25.93	
		-	-	80MVA, 220/132kV ICT - II (HV)	26.43	
		-	-	220kV Tsirang - Jigmeling Line	23.88	
-	-	132kV Gelephu - Salakati Line	5.79			
Total	470.03	Auxiliary Consumption & Transformation Losses at Generator end	0.56%			
3	336MW CHP	Unit- I	91.74	220kV CHP - Birpara Line- I	56.94	Unit IV under Shutdown.
		Unit- II	91.22	220kV CHP - Birpara Line- II	56.89	
		Unit- III	91.45	220kV CHP - Malbase Line- III	89.80	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	54.62	
		-	-	220kV Malbase - Birpara Line	26.40	
		-	-	66kV CHP - Chumdo Line	12.48	
		-	-	66kV CHP - Gedu Line	3.68	
		-	-	3x3MVA, 66/11kV TFR	0.97	
Total	274.41	Auxiliary Consumption & Transformation Losses at Generator end	-0.35%			
4	24MW BHP (U/S)	Unit- I	7.70	220kV BHP - Semtokha Line	40.97	
		Unit- II	7.20	66kV BHP - Lobeyasa Line	21.27	
		Total	14.90	220kV BHP - Tsirang Line	-19.35	
5	40MW BHP (L/S)	Unit- I	14.30	5MVA, 66/11kV TFR	0.41	
		Unit- II	14.20	30MVA ICT, 220/66kV (HV)	7.03	
		Total	28.50	Auxiliary Consumption & Transformation Losses at Generator end	0.23%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	48.64	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	48.98	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	45.21	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	48.98	Auxiliary Consumption & Transformation Losses at Generator end	0.08%			
7	60MW KHP	Unit- I	16.14	132kV KHP - Nangkhoh Line	42.55	
		Unit-II	16.40	132kV KHP - Kilikhar Line	22.04	
		Unit- III	16.60	5MVA, 132/11kV TFR	0.50	
		Unit- IV	16.56	132kV Motanga - Rangia Line	19.50	
		Total	65.70	Auxiliary Consumption & Transformation Losses at Generator end	0.93%	

Note: Generation-Load Summary (MW) for July 17, 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	1,140.24	291.64	288.38	824.72	3.26
2	Eastern Grid	535.73	152.64	149.40	406.97	3.24
Total		1,675.97	444.28	437.78	1,231.69	6.50

Note: Generation-Load Summary for July 17, 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	1,664.22	262.48	255.10	1,289.14	7.38
2	Eastern Grid	658.40	67.26	63.49	703.74	3.77
Total		2,322.62	329.74	318.59	1,992.88	11.15

NOTES: BHP Generation data collected from site.

- 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:
 - 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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