

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	May 20, 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	108.83	400kV THP - Siliguri Line - I	0.00	Unit- II & IV on standby. Unit-VI under shutdown. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	88.37	400kV THP - Siliguri Line- IV	102.94	
		Unit- IV	0.00	400kV THP - Malbase Line - III	180.74	
		Unit- V	89.01	400kV Malbase - Siliguri Line	89.25	
		Unit- VI	0.00	-	-	
		Total	286.21	Auxiliary Consumption & Transformation Losses at Generator end	0.88%	
2	720MW MHP	Unit-I	95.15	400kV MHP - Jigmeling Line - I	0.00	Unit- IV on Standby. 400kV MHP-JLG Line I & 400kV MHP-JLG Line III on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	100.19	400kV MHP - Jigmeling Line - II	126.75	
		Unit-III	60.11	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	127.05	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	93.24	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	61.91	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	93.83	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.54	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.91	
		-	-	220kV Tsirang - Jigmeling Line	-43.44	
-	-	132kV Gelephu - Salakati Line	-3.76			
Total	255.45	Auxiliary Consumption & Transformation Losses at Generator end	0.65%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	14.54	Unit-I & IV on Standby.
		Unit- II	66.94	220kV CHP - Birpara Line- II	14.63	
		Unit- III	80.26	220kV CHP - Malbase Line- III	38.78	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	59.21	
		-	-	220kV Malbase - Birpara Line	-5.68	
		-	-	66kV CHP - Chumdo Line	14.97	
		-	-	66kV CHP - Gedu Line	3.89	
		-	-	3x3MVA, 66/11kV TFR	1.28	
Total	147.20	Auxiliary Consumption & Transformation Losses at Generator end	-0.07%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	49.90	L/S unit-I & U/S Unit-I on standby.
		Unit- II	5.60	66kV BHP - Lobeyasa Line	20.69	
		Total	5.60	220kV BHP - Tsirang Line	-53.90	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.63	L/S unit-I & U/S Unit-I on standby.
		Unit- II	12.00	30MVA ICT, 220/66kV (HV)	15.81	
		Total	12.00	Auxiliary Consumption & Transformation Losses at Generator end	1.59%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	19.25	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	19.46	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	8.29	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	19.46	Auxiliary Consumption & Transformation Losses at Gen. end	0.05%			
7	60MW KHP	Unit- I	16.28	132kV KHP - Nangkhon Line	41.79	
		Unit-II	16.54	132kV KHP - Kilikhar Line	22.81	
		Unit- III	16.57	5MVA, 132/11kV TFR	0.56	
		Unit- IV	16.48	132kV Motanga - Rangia Line	31.53	
		Total	65.87	Auxiliary Consumption & Transformation Losses at Generator end	1.08%	

Note: Generation-Load Summary (MW) for May 20, 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	470.47	298.23	295.51	215.68	2.72
2	Eastern Grid	321.32	94.37	92.01	183.51	2.36
Total		791.79	392.60	387.52	399.19	5.08

Note: Generation-Load Summary for May 20, 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	682.20	235.56	228.16	428.28	7.40
2	Eastern Grid	466.84	73.58	70.68	411.62	2.90
Total		1,149.04	309.14	298.84	839.90	10.30

NOTE- BHP 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.
 - 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:	May 21, 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	109.37	400kV THP - Siliguri Line - I	0.00	Unit-II & IV on standby. Unit-VI under Shutdown. 400kV THP-Siliguri line I & II under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	89.24	400kV THP - Siliguri Line- IV	121.29	
		Unit- IV	0.00	400kV THP - Malbase Line - III	162.40	
		Unit- V	89.24	400kV Malbase - Siliguri Line	112.88	
		Unit- VI	0.00	-	-	
		Total	287.85	Auxiliary Consumption & Transformation Losses at Generator end	1.45%	
2	720MW MHP	Unit-I	179.82	400kV MHP - Jigmeling Line - I	0.00	Unit-III & Unit-IV on standby. 400kV MHP-JLG Line I & 400kV MHP-JLG Line III on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line II (Direct) on standby.
		Unit-II	179.88	400kV MHP - Jigmeling Line - II	178.15	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	178.55	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	67.30	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	114.42	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	171.43	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	10.80	
		-	-	80MVA, 220/132kV ICT - II (HV)	11.00	
		-	-	220kV Tsirang - Jigmeling Line	-37.77	
-	-	132kV Gelephu - Salakati Line	-3.34			
Total	359.70	Auxiliary Consumption & Transformation Losses at Generator end	0.83%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	16.09	Unit-I & IV on Standby.
		Unit- II	73.84	220kV CHP - Birpara Line- II	16.45	
		Unit- III	80.45	220kV CHP - Malbase Line- III	63.60	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	40.24	
		-	-	220kV Malbase - Birpara Line	-22.63	
		-	-	66kV CHP - Chumdo Line	12.53	
		-	-	66kV CHP - Gedu Line	4.42	
		-	-	3x3MVA, 66/11kV TFR	0.80	
Total	154.29	Auxiliary Consumption & Transformation Losses at Generator end	0.10%			
4	24MW BHP (U/S)	Unit- I	5.20	220kV BHP - Semtokha Line	60.10	L/S Unit-I on standby.
		Unit- II	4.80	66kV BHP - Lobeyasa Line	21.20	
		Total	10.00	220kV BHP - Tsirang Line	-50.56	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.38	L/S Unit-I on standby.
		Unit- II	21.30	30MVA ICT, 220/66kV (HV)	11.85	
		Total	21.30	Auxiliary Consumption & Transformation Losses at Generator end	0.58%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	21.69	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	21.95	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	8.00	
		-	-	5MVA, 220/33kV TFR	0.25	
Total	21.95	Auxiliary Consumption & Transformation Losses at Generator end	0.05%			
7	60MW KHP	Unit- I	16.52	132kV KHP - Nangkhoh Line	62.13	
		Unit-II	16.48	132kV KHP - Kilikhar Line	3.07	
		Unit- III	16.43	5MVA, 132/11kV TFR	0.54	
		Unit- IV	16.49	132kV Motanga - Rangia Line	19.77	
		Total	65.92	Auxiliary Consumption & Transformation Losses at Generator end	0.27%	

Note: Generation-Load Summary (MW) for May 21, 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	495.39	289.08	284.57	244.08	4.51
2	Eastern Grid	425.62	85.57	82.39	302.28	3.18
Total		921.01	374.65	366.96	546.36	7.69

Note: Generation-Load Summary for May 21, 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	665.48	207.05	196.88	443.89	10.17
2	Eastern Grid	497.42	62.76	59.66	449.20	3.10
Total		1,162.90	269.81	256.54	893.09	13.27

NOTE-BHP & MHP 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.

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