

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	May 21, 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	139.63	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	98.06	400kV THP - Siliguri Line- IV	154.69	
		Unit- IV	0.00	400kV THP - Malbase Line - III	218.28	
		Unit- V	138.45	400kV Malbase - Siliguri Line	142.79	
		Unit- VI	0.00	-	-	
		Total	376.14	Auxiliary Consumption & Transformation Losses at Generator end	0.84%	
2	720MW MHP	Unit-I	149.84	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	149.73	400kV MHP - Jigmeling Line - II	223.13	
		Unit-III	150.93	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	223.41	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	81.70	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	215.71	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	143.45	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	26.80	
		-	-	80MVA, 220/132kV ICT - II (HV)	27.20	
		-	-	220kV Tsirang - Jigmeling Line	-19.70	
-	-	132kV Gelephu - Salakati Line	8.24			
Total	450.50	Auxiliary Consumption & Transformation Losses at Generator end	0.88%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	38.11	Unit-I on Standby.
		Unit- II	63.95	220kV CHP - Birpara Line- II	38.10	
		Unit- III	63.53	220kV CHP - Malbase Line- III	61.41	
		Unit- IV	61.69	220kV CHP - Semtokha Line- IV	30.96	
		-	-	220kV Malbase - Birpara Line	15.05	
		-	-	66kV CHP - Chumdo Line	14.50	
		-	-	66kV CHP - Gedu Line	4.45	
		-	-	3x3MVA, 66/11kV TFR	1.50	
Total	189.17	Auxiliary Consumption & Transformation Losses at Generator end	0.07%			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	73.90	
		Unit- II	12.00	66kV BHP - Lobeyssa Line	26.95	
		Total	24.30	220kV BHP - Tsirang Line	-37.03	
5	40MW BHP (L/S)	Unit- I	20.30	5MVA, 66/11kV TFR	0.54	
		Unit- II	21.00	30MVA ICT, 220/66kV (HV)	3.81	
		Total	41.30	Auxiliary Consumption & Transformation Losses at Generator end	1.89%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	27.74	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	27.98	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	8.20	
		-	-	5MVA, 220/33kV TFR	0.15	
Total	27.98	Auxiliary Consumption & Transformation Losses at Gen. end	0.32%			
7	60MW KHP	Unit- I	16.54	132kV KHP - Nangkhor Line	42.66	
		Unit-II	16.56	132kV KHP - Kilikhar Line	22.35	
		Unit- III	16.56	5MVA, 132/11kV TFR	0.52	
		Unit- IV	16.54	132kV Motanga - Rangia Line	35.14	
		Total	66.20	Auxiliary Consumption & Transformation Losses at Generator end	1.01%	

Note: Generation-Load Summary (MW) for May 21, 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	658.89	289.85	285.21	388.74	4.64
2	Eastern Grid	516.70	94.46	89.83	402.54	4.63
Total		1,175.59	384.31	375.04	791.28	9.27

Note: Generation-Load Summary for May 21, 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	579.91	212.23	208.04	346.98	4.19
2	Eastern Grid	416.22	66.80	65.00	370.12	1.80
Total		996.13	279.03	273.04	717.10	5.99

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 22, 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	108.21	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	148.24	400kV THP - Siliguri Line- IV	181.32	
		Unit- IV	0.00	400kV THP - Malbase Line - III	229.51	
		Unit- V	157.93	400kV Malbase - Siliguri Line	170.20	
		Unit- VI	0.00	-	-	
		Total	414.38	Auxiliary Consumption & Transformation Losses at Generator end	0.86%	
2	720MW MHP	Unit-I	105.21	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	115.23	400kV MHP - Jigmeling Line - II	166.72	
		Unit-III	115.76	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	167.27	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	47.73	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	113.30	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	171.46	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	12.83	
		-	-	80MVA, 220/132kV ICT - II (HV)	12.97	
		-	-	220kV Tsirang - Jigmeling Line	-19.98	
-	-	132kV Gelephu - Salakati Line	1.55			
Total	336.20	Auxiliary Consumption & Transformation Losses at Generator end	0.66%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	35.01	Unit-I on Standby.
		Unit- II	70.87	220kV CHP - Birpara Line- II	34.99	
		Unit- III	69.55	220kV CHP - Malbase Line- III	75.12	
		Unit- IV	70.34	220kV CHP - Semtokha Line- IV	46.66	
		-	-	220kV Malbase - Birpara Line	-0.51	
		-	-	66kV CHP - Chumdo Line	13.60	
		-	-	66kV CHP - Gedu Line	3.81	
		-	-	3x3MVA, 66/11kV TFR	1.15	
Total	210.76	Auxiliary Consumption & Transformation Losses at Generator end	0.20%			
4	24MW BHP (U/S)	Unit- I	5.40	220kV BHP - Semtokha Line	56.80	L/S Unit-I on standby.
		Unit- II	5.00	66kV BHP - Lobeyasa Line	21.22	
		Total	10.40	220kV BHP - Tsirang Line	-44.74	
5	40MW BHP (L/S)	Unit- I	11.50	5MVA, 66/11kV TFR	0.35	L/S Unit-I on standby.
		Unit- II	11.50	30MVA ICT, 220/66kV (HV)	11.34	
		Total	23.00	Auxiliary Consumption & Transformation Losses at Generator end	-0.69%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	33.71	Unit-I on standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	33.96	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	0.71	
		-	-	5MVA, 220/33kV TFR	0.24	
Total	33.96	Auxiliary Consumption & Transformation Losses at Generator end	0.03%			
7	60MW KHP	Unit- I	16.52	132kV KHP - Nangkhoh Line	58.57	
		Unit-II	16.52	132kV KHP - Kilikhar Line	6.56	
		Unit- III	16.63	5MVA, 132/11kV TFR	0.54	
		Unit- IV	16.47	132kV Motanga - Rangia Line	29.90	
		Total	66.14	Auxiliary Consumption & Transformation Losses at Generator end	0.71%	

Note: Generation-Load Summary (MW) for May 22, 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	692.50	291.47	287.72	421.01	3.75
2	Eastern Grid	402.34	66.15	63.47	316.21	2.68
Total		1,094.84	357.62	351.19	737.22	6.43

Note: Generation-Load Summary for May 22, 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	512.61	198.47	190.02	303.99	8.45
2	Eastern Grid	436.77	55.09	53.05	391.83	2.04
Total		949.38	253.56	243.07	695.82	10.49

NOTE-BHP 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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