

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	April 21, 2022
Hours:	18:00 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	107.48	400kV THP - Siliguri Line - I	0.00	Unit-IV under Annual Maintenance & Unit-III & V on standby. 400kV THP-Siliguri line I & II under breakdown
		Unit- II	98.79	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	114.81	
		Unit- IV	0.00	400kV THP - Malbase Line - III	180.47	
		Unit- V	0.00	400kV Malbase - Siliguri Line	98.62	
		Unit- VI	89.69	-	-	
		Total	295.96	Auxiliary Consumption & Transformation Losses at Generator end	0.23%	
2	720MW MHP	Unit-I	95.07	400kV MHP - Jigmeling Line - I	94.54	Unit- III on Standby. Unit-II under Annual Maintenance. 400kV MHP-JLG Line II under AMP & 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. 132kV Gelephu_Salakati line under shutdown
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	95.35	400kV MHP - Jigmeling Line - IV	95.13	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	84.05	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	41.45	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	61.75	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.34	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.65	
		-	-	220kV Tsirang - Jigmeling Line	-53.47	
-	-	132kV Gelephu - Salakati Line	0.00			
Total	190.42	Auxiliary Consumption & Transformation Losses at Generator end	0.39%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	16.72	Unit-I & Unit-II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Line- II	16.60	
		Unit- III	75.87	220kV CHP - Malbase Line- III	49.41	
		Unit- IV	68.85	220kV CHP - Semtokha Line- IV	42.89	
		-	-	220kV Malbase - Birpara Line	-10.81	
		-	-	66kV CHP - Chumdo Line	11.86	
		-	-	66kV CHP - Gedu Line	4.88	
		-	-	3x3MVA, 66/11kV TFR	1.10	
Total	144.72	Auxiliary Consumption & Transformation Losses at Generator end	0.87%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	44.30	U/S Unit-I on Standby. L/S Unit-II under AMP.
		Unit- II	5.60	66kV BHP - Lobeyasa Line	16.77	
		Total	5.60	220kV BHP - Tsirang Line	-45.04	
5	40MW BHP (L/S)	Unit- I	10.90	5MVA, 66/11kV TFR	0.49	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	11.86	
		Total	10.90	Auxiliary Consumption & Transformation Losses at Generator end	-0.12%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00	Unit-I on standby. 220kV DHP_Tsirang Line on Standby.
		Unit-II	18.95	220kV DHP - Dagapela Line	18.75	
		-	-	220kV Jigmeling - Dagapela Line	-10.33	
		-	-	5MVA, 220/33kV TFR	0.19	
Total	18.95	Auxiliary Consumption & Transformation Losses at Gen. end	0.05%			
7	60MW KHP	Unit- I	15.13	132kV KHP - Nangkhon Line	17.10	Unit II on standby.
		Unit-II	0.00	132kV KHP - Kilikhar Line	12.52	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.35	
		Unit- IV	15.11	132kV Motanga - Rangia Line	6.86	
		Total	30.24	Auxiliary Consumption & Transformation Losses at Generator end	0.89%	

Note: Generation-Load Summary (MW) for April 21, 2022 at 18:00hrs.

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	476.13	283.33	281.40	235.94	1.93
2	Eastern Grid	220.66	67.46	66.44	110.06	1.02
Total		696.79	350.79	347.84	346.00	2.95

Note: Generation-Load Summary for April 21, 2021 at 18:00hrs.

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	318.97	233.00	227.20	74.83	5.80
2	Eastern Grid	157.91	80.36	79.53	88.69	0.83
Total		476.88	313.36	306.73	163.52	6.63

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:	April 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	109.54	400kV THP - Siliguri Line - I	0.00	Unit-IV under Annual Maintenance, Unit-VI under PTW & Unit- III & V on standby. 400kV THP-Siliguri line I & II under breakdown
		Unit- II	145.87	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	97.82	
		Unit- IV	0.00	400kV THP - Malbase Line - III	155.64	
		Unit- V	0.00	400kV Malbase - Siliguri Line	84.51	
		Unit- VI	0.00	-	-	
		Total	255.41	Auxiliary Consumption & Transformation Losses at Generator end	0.76%	
2	720MW MHP	Unit-I	109.81	400kV MHP - Jigmeling Line - I	106.85	Unit- III on Standby. Unit-II under Annual Maintenance. 400kV MHP-JLG Line II under AMP & 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. 132kV Gelephu_Salakati line under shutdown
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	105.00	400kV MHP - Jigmeling Line - IV	107.29	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	67.69	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	57.34	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	86.04	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	8.42	
		-	-	80MVA, 220/132kV ICT - II (HV)	8.57	
		-	-	220kV Tsirang - Jigmeling Line	-61.99	
-	-	132kV Gelephu - Salakati Line	0.00			
Total	214.81	Auxiliary Consumption & Transformation Losses at Generator end	0.31%			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	10.36	Unit-I on Standby & Unit-II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Line- II	10.65	
		Unit- III	75.58	220kV CHP - Malbase Line- III	63.11	
		Unit- IV	78.79	220kV CHP - Semtokha Line- IV	48.92	
		-	-	220kV Malbase - Birpara Line	-31.26	
		-	-	66kV CHP - Chumdo Line	13.03	
		-	-	66kV CHP - Gedu Line	4.70	
		-	-	3x3MVA, 66/11kV TFR	1.01	
Total	154.37	Auxiliary Consumption & Transformation Losses at Generator end	1.68%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	51.80	U/S Unit-I on Standby. L/S Unit-II under AMP.
		Unit- II	5.60	66kV BHP - Lobeyssa Line	19.39	
		Total	5.60	220kV BHP - Tsirang Line	-53.77	
5	40MW BHP (L/S)	Unit- I	11.90	5MVA, 66/11kV TFR	0.30	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	14.08	
		Total	11.90	Auxiliary Consumption & Transformation Losses at Generator end	-1.26%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00	Unit-I on Standby. 220kV DHP_Tsirang Line on Standby.
		Unit-II	20.17	220kV DHP - Dagapela Line	19.95	
		-	-	220kV Jigmeling - Dagapela Line	-11.85	
		-	-	5MVA, 220/33kV TFR	0.21	
Total	20.17	Auxiliary Consumption & Transformation Losses at Generator end	0.05%			
7	60MW KHP	Unit- I	13.45	132kV KHP - Nangkhoh Line	26.71	Unit III on standby.
		Unit-II	13.49	132kV KHP - Kilikhar Line	12.93	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.65	
		Unit- IV	13.36	132kV Motanga - Rangia Line	-6.76	
		Total	40.30	Auxiliary Consumption & Transformation Losses at Generator end	0.02%	

Note: Generation-Load Summary (MW) for April 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	447.45	325.51	321.18	172.08	4.33
2	Eastern Grid	255.11	68.35	67.67	136.62	0.68
Total		702.56	393.86	388.85	308.70	5.01

Note: Generation-Load Summary for April 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	281.93	226.76	221.80	42.80	4.96
2	Eastern Grid	170.26	61.03	58.97	121.60	2.06
Total		452.19	287.79	280.77	164.40	7.02

NOTE-BHP 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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