

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date:	April 18, 2022
Hours:	18:00 Hours

Date	Time	Load(MW)
30-Dec-21	18:00hrs	488.35

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	106.04	400kV THP - Siliguri Line - I	0.00	Unit-IV under Annual Maintenance & Unit-III & V on standby. 400kV THP-Siliguri line I under shutdown 400kV THP-Siliguri line II under breakdown
		Unit- II	93.43	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	148.67	
		Unit- IV	0.00	400kV THP - Malbase Line - III	203.19	
		Unit- V	0.00	400kV Malbase - Siliguri Line	132.73	
		Unit- VI	149.20	-	-	
		Total	348.67	Auxiliary Consumption & Transformation Losses at Generator end	-0.91%	
2	720MW MHP	Unit-I	80.19	400kV MHP - Jigmeling Line - I	104.88	Unit- III on Standby. Unit-II under Annual Maintenance. 400kV MHP-JLG Line II & 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	130.53	400kV MHP - Jigmeling Line - IV	105.06	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	60.73	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	59.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	87.94	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	9.24	
		-	-	80MVA, 220/132kV ICT - II (HV)	9.39	
		-	-	220kV Tsirang - Jigmeling Line	-60.10	
-	-	132kV Gelephu - Salakati Line	0.00			
Total	210.72	Auxiliary Consumption & Transformation Losses at Generator end	0.37%			
3	336MW CHP	Unit- I	84.09	220kV CHP - Birpara Line- I	23.44	CHP Unit-III on standby & Unit-II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Line- II	23.56	
		Unit- III	0.00	220kV CHP - Malbase Line- III	51.52	
		Unit- IV	84.45	220kV CHP - Semtokha Line- IV	51.49	
		-	-	220kV Malbase - Birpara Line	-0.99	
		-	-	66kV CHP - Chumdo Line	13.87	
		-	-	66kV CHP - Gedu Line	2.64	
		-	-	3x3MVA, 66/11kV TFR	0.90	
Total	168.54	Auxiliary Consumption & Transformation Losses at Generator end	0.66%			
4	24MW BHP (U/S)	Unit- I	5.80	220kV BHP - Semtokha Line	49.80	Upper stage Unit-II & Lower stage Unit-II under AMP
		Unit- II	0.00	66kV BHP - Lobeyssa Line	20.13	
		Total	5.80	220kV BHP - Tsirang Line	-53.40	
5	40MW BHP (L/S)	Unit- I	11.00	5MVA, 66/11kV TFR	0.43	Upper stage Unit-II & Lower stage Unit-II under AMP
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	14.98	
		Total	11.00	Auxiliary Consumption & Transformation Losses at Generator end	-0.95%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00	Unit-I under Annual Maintenance. 220kV DHP-Tsirang Line on standby.
		Unit-II	19.95	220kV DHP - Dagapela Line	19.74	
		-	-	220kV Jigmeling - Dagapela Line	-18.79	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	19.95	Auxiliary Consumption & Transformation Losses at Gen. end	0.05%			
7	60MW KHP	Unit- I	16.09	132kV KHP - Nangkhoh Line	20.07	Unit IV on standby. Unit-II tripped at 16:43hrs
		Unit-II	0.00	132kV KHP - Kilikhar Line	11.43	
		Unit- III	16.08	5MVA, 132/11kV TFR	0.35	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-15.70	
		Total	32.17	Auxiliary Consumption & Transformation Losses at Generator end	0.99%	

Note: Generation-Load Summary (MW) for April 18, 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	553.96	286.65	269.13	327.41	17.52
2	Eastern Grid	242.89	51.55	50.45	131.24	1.10
Total		796.85	338.20	319.58	458.65	18.62

Note: Generation-Load Summary for April 18, 2020 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	283.57	259.30	254.14	3.72	5.16
2	Eastern Grid	190.26	75.85	73.97	134.96	1.88
Total		473.83	335.15	328.11	138.68	7.04

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.
- 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

Coincidental Maximum Load

Date:	April 19, 2022
Hours:	09:00 Hours

Date	Time	Load(MW)
29-Dec-21	18:00hrs	482.44

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	108.13	400kV THP - Siliguri Line - I	0.00	Unit-IV under Annual Maintenance & Unit-III & Unit V on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line II under Standby.
		Unit- II	98.85	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	114.78	
		Unit- IV	0.00	400kV THP - Malbase Line - III	170.37	
		Unit- V	0.00	400kV Malbase - Siliguri Line	101.22	
		Unit- VI	79.98	-	-	
		Total	286.96	Auxiliary Consumption & Transformation Losses at Generator end	0.63%	
2	720MW MHP	Unit-I	99.86	400kV MHP - Jigmeling Line - I	104.56	Unit- III on Standby. Unit-II under Annual Maintenance. 400kV MHP-JLG Line II & 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	110.46	400kV MHP - Jigmeling Line - IV	104.93	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	60.78	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	58.70	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	88.24	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	9.07	
		-	-	80MVA, 220/132kV ICT - II (HV)	9.21	
		-	-	220kV Tsirang - Jigmeling Line	-61.80	
-	-	132kV Gelephu - Salakati Line	0.00			
Total	210.32	Auxiliary Consumption & Transformation Losses at Generator end	0.39%			
3	336MW CHP	Unit- I	74.26	220kV CHP - Birpara Line- I	14.00	Unit-III on Standby. Unit-II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Line- II	14.20	
		Unit- III	0.00	220kV CHP - Malbase Line- III	51.29	
		Unit- IV	70.73	220kV CHP - Semtokha Line- IV	48.07	
		-	-	220kV Malbase - Birpara Line	-17.21	
		-	-	66kV CHP - Chumdo Line	12.91	
		-	-	66kV CHP - Gedu Line	2.96	
		-	-	3x3MVA, 66/11kV TFR	1.05	
Total	144.99	Auxiliary Consumption & Transformation Losses at Generator end	0.35%			
4	24MW BHP (U/S)	Unit- I	5.80	220kV BHP - Semtokha Line	51.30	Upper stage Unit-II & Lower stage Unit-II under AMP.
		Unit- II	0.00	66kV BHP - Lobeysa Line	19.54	
		Total	5.80	220kV BHP - Tsirang Line	-54.17	
5	40MW BHP (L/S)	Unit- I	11.10	5MVA, 66/11kV TFR	0.34	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	14.27	
		Total	11.10	Auxiliary Consumption & Transformation Losses at Generator end	-0.65%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	0.00	Unit-I under Annual Maintenance. 220kV DHP_Tsirang Line on standby.
		Unit-II	20.17	220kV DHP - Dagapela Line	19.97	
		-	-	220kV Jigmeling - Dagapela Line	-19.26	
		-	-	5MVA, 220/33kV TFR	0.10	
Total	20.17	Auxiliary Consumption & Transformation Losses at Generator end	0.50%			
7	60MW KHP	Unit- I	15.08	132kV KHP - Nangkhoh Line	30.06	Unit II on standby.
		Unit-II	0.00	132kV KHP - Kilikhar Line	14.45	
		Unit- III	15.00	5MVA, 132/11kV TFR	0.29	
		Unit- IV	15.03	132kV Motanga - Rangia Line	1.29	
		Total	45.11	Auxiliary Consumption & Transformation Losses at Generator end	0.68%	

Note: Generation-Load Summary (MW) for April 19, 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	469.02	303.83	281.55	226.99	22.28
2	Eastern Grid	255.43	45.40	44.26	148.23	1.14
Total		724.45	349.23	325.81	375.22	23.42

Note: Generation-Load Summary for April 19, 2020 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	337.88	229.16	220.67	94.21	8.49
2	Eastern Grid	147.47	51.65	50.73	110.33	0.92
Total		485.35	280.81	271.40	204.54	9.41

NOTE-BHP data collected from Site.

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- 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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