

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: November 26, 2021
Hours: 19:00 Hours

Date **Time** **Load(MW)**
 18-Nov-21 18:00hrs 456.37 MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Line - I	0.00	Unit-I & III under AMP. Unit-II on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-MAL line under Annual Maintenance .
		Unit- II	0.00	400kV THP - Siliguri Line - II	189.30	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	181.85	
		Unit- IV	138.81	400kV THP - Malbase Line - III	0.00	
		Unit- V	98.28	400kV Malbase - Siliguri Line	-54.39	
		Unit- VI	138.23	-	-	
		Total	375.32	Auxiliary Consumption & Transformation Losses at Generator end	1.11%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	104.33	Unit-I on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. JLG_ALI Line II (Direct) opened (Both end).
		Unit-II	130.23	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	80.39	400kV MHP - Jigmeling Line - III	104.86	
		Unit-IV	0.00	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)	63.16	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	54.11	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	86.76	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.28	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.26	
		-	-	220kV Tsirang - Jigmeling Line	-6.01	
-	-	132kV Gelephu - Salakati Line	-1.40			
Total	210.62	Auxiliary Consumption & Transformation Losses at Generator end	0.68%			
3	336MW CHP	Unit- I	61.22	220kV CHP - Birpara Line- I	21.28	Unit-IV under AMP.
		Unit- II	60.93	220kV CHP - Birpara Line- II	21.39	
		Unit- III	74.64	220kV CHP - Malbase Line- III	76.19	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	55.16	
		-	-	220kV Malbase - Birpara Line	-23.21	
		-	-	66kV CHP - Chumdo Line	17.05	
		-	-	66kV CHP - Gedu Line	3.84	
		-	-	3x3MVA, 66/11kV TFR	2.00	
Total	196.78	Auxiliary Consumption & Transformation Losses at Generator end	-0.06%			
4	24MW BHP (U/S)	Unit- I	6.90	220kV BHP - Semtokha Line	59.80	
		Unit- II	6.70	66kV BHP - Lobeyasa Line	28.54	
		Total	13.60	220kV BHP - Tsirang Line	-48.93	
5	40MW BHP (L/S)	Unit- I	13.00	5MVA, 66/11kV TFR	0.73	
		Unit- II	13.60	30MVA ICT, 220/66kV (HV)	15.98	
		Total	26.60	Auxiliary Consumption & Transformation Losses at Generator end	0.15%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	46.80	Unit I on standby. 220kV DHP-Dagapela Line on standby.
		Unit-II	47.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	13.73	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	47.00	Auxiliary Consumption & Transformation Losses at Gen. end	0.00%			
7	60MW KHP	Unit- I	12.15	132kV KHP - Nangkhoh Line	17.20	Unit-IV under AMP.
		Unit-II	12.11	132kV KHP - Kilikhar Line	16.52	
		Unit- III	12.12	5MVA, 132/11kV TFR	0.30	
		Unit- IV	0.00	132kV Motanga - Rangia Line	6.99	
		Total	36.38	Auxiliary Consumption & Transformation Losses at Generator end	6.49%	

Note: Generation-Load Summary (MW) for November 26, 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	659.30	329.10	324.98	336.21	4.11
2	Eastern Grid	247.00	94.53	90.74	146.46	3.79
Total		906.30	423.63	415.72	482.67	7.90

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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	536.70	223.90	219.72	280.46	4.18
2	Eastern Grid	212.47	52.37	49.04	192.44	3.33
Total		749.17	276.27	268.76	472.90	7.51

NOTE-BHP,KHP, MHPA, Salakati and Rangia 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: November 27, 2021
Hours: 09:00 Hours

Date: 19-Nov-21 **Time:** 18:00hrs **Load(MW):** 456.37 MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Line - I	0.00	Unit-I & III under AMP. Unit-II on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-MAL line under Annual Maintenance .
		Unit- II	0.00	400kV THP - Siliguri Line - II	187.65	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	182.31	
		Unit- IV	138.50	400kV THP - Malbase Line - III	0.00	
		Unit- V	97.98	400kV Malbase - Siliguri Line	-49.13	
		Unit- VI	138.30	-	-	
		Total	374.78	Auxiliary Consumption & Transformation Losses at Generator end	1.29%	
2	720MW MHP	Unit-I	130.17	400kV MHP - Jigmeling Line - I	104.17	Unit-II on Standby. Unit IV under Annual Maintenance. 400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. JLG_ALI Line II(Direct) opened (Both end).
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	80.13	400kV MHP - Jigmeling Line - III	104.81	
		Unit-IV	0.00	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)	48.46	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	63.06	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	95.53	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.35	
		-	-	80MVA, 220/132kV ICT - II (HV)	17.58	
		-	-	220kV Tsirang - Jigmeling Line	1.30	
-	-	132kV Gelephu - Salakati Line	5.79			
Total	210.30	Auxiliary Consumption & Transformation Losses at Generator end	0.63%			
3	336MW CHP	Unit- I	65.48	220kV CHP - Birpara Line- I	19.45	Unit-IV under AMP.
		Unit- II	66.47	220kV CHP - Birpara Line- II	19.49	
		Unit- III	72.17	220kV CHP - Malbase Line- III	79.63	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	64.65	
		-	-	220kV Malbase - Birpara Line	-30.53	
		-	-	66kV CHP - Chumdo Line	16.94	
		-	-	66kV CHP - Gedu Line	3.08	
		-	-	3x3MVA, 66/11kV TFR	1.31	
Total	204.12	Auxiliary Consumption & Transformation Losses at Generator end	-0.21%			
4	24MW BHP (U/S)	Unit- I	7.00	220kV BHP - Semtokha Line	54.50	
		Unit- II	6.80	66kV BHP - Lobeysa Line	28.36	
		Total	13.80	220kV BHP - Tsirang Line	-42.48	
5	40MW BHP (L/S)	Unit- I	13.50	5MVA, 66/11kV TFR	0.45	
		Unit- II	13.70	30MVA ICT, 220/66kV (HV)	15.29	
		Total	27.20	Auxiliary Consumption & Transformation Losses at Generator end	0.41%	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	46.76	Unit I on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	47.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	12.94	
		-	-	5MVA, 220/33kV TFR		
Total	47.00	Auxiliary Consumption & Transformation Losses at Generator end	0.51%			
7	60MW KHP	Unit- I	11.44	132kV KHP - Nangkhoh Line	17.37	Unit-IV under AMP.
		Unit-II	11.50	132kV KHP - Kilikhar Line	16.50	
		Unit- III	11.50	5MVA, 132/11kV TFR	0.23	
		Unit- IV	0.00	132kV Motanga - Rangia Line	8.68	
		Total	34.44	Auxiliary Consumption & Transformation Losses at Generator end	0.99%	

Note: Generation-Load Summary (MW) for November 27, 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	666.90	336.36	331.55	329.25	4.80
2	Eastern Grid	244.74	72.98	71.32	173.06	1.66
Total		911.64	409.34	402.88	502.30	6.46

Note: Generation-Load Summary for November 27, 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	538.10	205.23	196.86	298.60	8.37
2	Eastern Grid	210.28	50.40	48.26	194.15	2.14
Total		748.38	255.63	245.12	492.75	10.51

NOTE-BHP,MHPA and Rangia 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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