

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: August 24, 2022
Hours: 19:00 Hours

Date **Time** **Load(MW)**
 15-Aug-22 19:30 hrs 521.02

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	186.00	400kV THP - Siliguri Line - I	0.00	400kV THP_ Siliguri Line I under breakdown
		Unit- II	183.31	400kV THP - Siliguri Line - II	324.89	
		Unit- III	128.03	400kV THP - Siliguri Line- IV	310.93	
		Unit- IV	128.53	400kV THP - Malbase Line - III	353.13	
		Unit- V	185.00	400kV Malbase - Siliguri Line	298.68	
		Unit- VI	185.38	-	-	
		Total	996.25	Auxiliary Consumption & Transformation Losses at Generator end	0.73%	
2	720MW MHP	Unit-I	145.21	400kV MHP - Jigmeling Line - I	186.59	400kV MHP-JLG Line II on Standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	145.19	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.47	400kV MHP - Jigmeling Line - III	193.76	
		Unit-IV	150.60	400kV MHP - Jigmeling Line - IV	193.39	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	68.25	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	124.80	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	187.64	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	186.63	
		-	-	80MVA, 220/132kV ICT - I (HV)	42.71	
		-	-	80MVA, 220/132kV ICT - II (HV)	43.49	
		-	-	220kV Tsirang - Jigmeling Line	-4.84	
-	-	132kV Gelephu - Salakati Line	11.60			
Total	576.47	Auxiliary Consumption & Transformation Losses at Generator end	0.47%			
3	336MW CHP	Unit- I	91.51	220kV CHP - Birpara Line- I	109.85	220kV MAL_Birpara Line under breakdown.
		Unit- II	90.88	220kV CHP - Birpara Line- II	109.86	
		Unit- III	91.49	220kV CHP - Malbase Line- III	23.81	
		Unit- IV	75.31	220kV CHP - Semtokha Line- IV	81.67	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	15.92	
		-	-	66kV CHP - Gedu Line	6.17	
		-	-	3x3MVA, 66/11kV TFR	1.61	
Total	349.19	Auxiliary Consumption & Transformation Losses at Generator end	0.09%			
4	24MW BHP (U/S)	Unit- I	18.02	220kV BHP - Semtokha Line	24.02	
		Unit- II	17.85	66kV BHP - Lobeyssa Line	24.70	
		Total	35.87	220kV BHP - Tsirang Line	7.67	
5	40MW BHP (L/S)	Unit- I	9.65	5MVA, 66/11kV TFR	0.78	
		Unit- II	9.65	30MVA ICT, 220/66kV (HV)	2.30	
		Total	19.30	Auxiliary Consumption & Transformation Losses at Generator end	-3.63%	
6	126MW DHP	Unit-I	34.32	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	34.99	220kV DHP - Dagapela Line	68.85	
		-	-	220kV Jigmeling - Dagapela Line	-15.22	
		-	-	5MVA, 220/33kV TFR	0.30	
Total	69.31	Auxiliary Consumption & Transformation Losses at Gen. end	0.23%			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhor Line	37.66	
		Unit-II	16.50	132kV KHP - Kilikhar Line	27.22	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.31	
		Unit- IV	16.50	132kV Motanga - Rangia Line	29.01	
		Total	66.00	Auxiliary Consumption & Transformation Losses at Generator end	1.23%	

Note: Generation-Load Summary (MW) for August 24, 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	1,469.92	305.33	299.57	1,154.21	5.76
2	Eastern Grid	642.47	113.17	109.63	539.68	3.54
Total		2,112.39	418.50	409.20	1,693.89	9.30

Note: Generation-Load Summary for August 24, 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	1,670.66	309.02	300.22	1,265.35	8.80
2	Eastern Grid	853.18	76.13	70.74	873.34	5.39
Total		2,523.84	385.15	370.96	2,138.69	14.19

NOTE-

- 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: August 25, 2022
Hours: 09:00 Hours

Date: 15-Aug-22 **Time:** 19:30 hrs **Load(MW):** 521.02

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	184.41	400kV THP - Siliguri Line - I	0.00	400kV THP_Siliguri Line I under breakdown.
		Unit- II	185.25	400kV THP - Siliguri Line - II	303.54	
		Unit- III	99.32	400kV THP - Siliguri Line- IV	290.58	
		Unit- IV	99.51	400kV THP - Malbase Line - III	341.08	
		Unit- V	185.35	400kV Malbase - Siliguri Line	275.42	
		Unit- VI	186.66	-	-	
		Total	940.50	Auxiliary Consumption & Transformation Losses at Generator end	0.56%	
2	720MW MHP	Unit-I	145.23	400kV MHP - Jigmeling Line - I	285.98	400kV MHP-JLG Line II & III under standby 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	145.24	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.41	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	150.44	400kV MHP - Jigmeling Line - IV	287.26	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	41.09	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	131.25	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	197.56	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	196.33	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.41	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.83	
		-	-	220kV Tsirang - Jigmeling Line	-5.53	
-	-	132kV Gelephu - Salakati Line	11.00			
Total	576.32	Auxiliary Consumption & Transformation Losses at Generator end	0.53%			
3	336MW CHP	Unit- I	91.51	220kV CHP - Birpara Line- I	84.70	220kV MAL_BIR line under breakdown.
		Unit- II	90.88	220kV CHP - Birpara Line- II	84.82	
		Unit- III	91.49	220kV CHP - Malbase Line- III	96.19	
		Unit- IV	75.31	220kV CHP - Semtokha Line- IV	58.67	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	11.07	
		-	-	66kV CHP - Gedu Line	8.54	
		-	-	3x3MVA, 66/11kV TFR	0.89	
Total	349.19	Auxiliary Consumption & Transformation Losses at Generator end	1.23%			
4	24MW BHP (U/S)	Unit- I	10.30	220kV BHP - Semtokha Line	35.52	
		Unit- II	9.90	66kV BHP - Lobeyasa Line	22.78	
		Total	20.20	220kV BHP - Tsirang Line	-3.83	
5	40MW BHP (L/S)	Unit- I	18.10	5MVA, 66/11kV TFR	0.42	
		Unit- II	17.60	30MVA ICT, 220/66kV (HV)	4.03	
		Total	35.70	Auxiliary Consumption & Transformation Losses at Generator end	1.81%	
6	126MW DHP	Unit-I	33.35	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	33.02	220kV DHP - Dagapela Line	65.94	
		-	-	220kV Jigmeling - Dagapela Line	-15.22	
		-	-	5MVA, 220/33kV TFR	0.40	
Total	66.37	Auxiliary Consumption & Transformation Losses at Generator end	0.05%			
7	60MW KHP	Unit- I	16.32	132kV KHP - Nangkhoh Line	15.83	
		Unit-II	16.50	132kV KHP - Kilikhar Line	49.31	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.33	
		Unit- IV	16.50	132kV Motanga - Rangia Line	13.78	
		Total	65.82	Auxiliary Consumption & Transformation Losses at Generator end	0.52%	

Note: Generation-Load Summary (MW) for August 25, 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	1,411.96	363.21	352.56	1,039.06	10.65
2	Eastern Grid	642.14	101.91	98.48	549.92	3.43
Total		2,054.10	465.12	451.04	1,588.98	14.08

Note: Generation-Load Summary for August 25, 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	1,668.96	290.89	281.04	1,313.41	9.85
2	Eastern Grid	852.59	75.15	70.23	842.10	4.92
Total		2,521.55	366.04	351.27	2,155.51	14.77

Notes: KHP, MHP & 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.