

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	April 28, 2021
Hours:	19:00 Hours

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	119.88	400kV THP - Siliguri Line - I	71.96	+	Unit- III & IV under AMP. Unit-II & VI on standby. 400kV THP-SIL Line II & 400kV THP-SIL Line IV on Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Line - III	142.42	+	
		Unit- V	100.63	400kV Malbase - Siliguri Line	51.99	+	
		Unit- VI	0.00	-	-	-	
		Total	220.51	Error at Station/Auxiliary Consumption/Losses		2.780%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00		Unit I under AMP Unit-III under breakdown. 400kV MHP_JLG Line I, II & III Standby. 132kV MHP_Yurmoo line I & II are not in service. 400/220kV ICT at JLG not in service 400kV JIG-ALI Line-II under standby.
		Unit-II	84.82	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	100.53	400kV MHP - Jigmeling Line - IV	184.53	+	
		-	-	132kV MHP - Yurmoo Line - I	0.00		
		-	-	132kV MHP - Yurmoo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - I	183.00		
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	5.00	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	5.10	+	
		-	-	220kV Tsirang - Jigmeling Line	12.20	+	
		-	-	132kV Gelephu - Salakati Line	-18.02	-	
Total	185.35	Error at Station/Auxiliary Consumption/Losses		0.442%			
3	336MW CHP	Unit- I	54.63	220kV CHP - Birpara Line- I	-1.15	+	Unit-II Standby. Unit-IV under AMP. 220kV CHP_BIR line II standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	0.00		
		Unit- III	52.72	220kV CHP - Malbase Line- III	35.72	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	51.54	+	
		-	-	220kV Malbase - Birpara Line	-27.90	+	
		-	-	66kV CHP - Chumdo Line	13.26	+	
		-	-	66kV CHP - Gedu Line	3.67	+	
		-	-	3x3MVA, 66/11kV TFR	1.50	+	
Total	107.35	Error at Station/Auxiliary Consumption/Losses		2.618%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	-0.85	+	U/S Unit-I & L/S Unit-II Standby 220kV BHP-Tsirang line under shutdown
		Unit- II	4.50	66kV BHP - Lobeyasa Line	13.10	+	
		Total	4.50	220kV BHP - Tsirang Line	0.00		
	40MW BHP (L/S)	Unit- I	8.60	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	7.75	+	
Total	8.60	Error at Station/Auxiliary Consumption/Losses		-0.305%			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	15.18	+	Unit-I Standby.
		Unit-II	15.47	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.00	+	
		-	-	5MVA, 220/33kV TFR	0.08	+	
		Total	15.47	Error at Station/Auxiliary Consumption/Losses		1.357%	
6	60MW KHP	Unit- I	11.00	132kV KHP - Nangkhor Line	21.59	+	Unit-III Standby.
		Unit-II	11.00	132kV KHP - Kilikhar Line	9.90	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.54	+	
		Unit- IV	11.00	132kV Motanga - Rangia Line	-4.25	+	
		Total	33.00	Error at Station/Auxiliary Consumption/Losses		2.939%	

Note: Generation-Load Summary (MW) for April 28, 2021 at 19:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	356.43	249.33	242.22	94.90	7.11
2	Eastern Grid	218.35	69.82	68.03	160.73	1.79
Total		574.78	319.15	310.25	255.63	8.90

Note: Generation-Load Summary for April 28, 2020 at 19:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	604.14	233.39	224.17	351	9.22
2	Eastern Grid	271.29	69.07	63.91	221.97	5.16
Total		875.43	302.46	288.08	572.97	14.38

NOTE-BHP & MHP data collected from site

1. The Instantaneous load balance is 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

Maximum Load/Demand till Date

Date:	April 29, 2021
Hours:	09:00 Hours

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	120.16	400kV THP - Siliguri Line - I	67.44	+	Unit III & IV under AMP. Unit II & VI on standby. 400kV THP-SIL Line II & 400kV THP-SIL Line IV on Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Line - III	125.98	+	
		Unit- V	80.25	400kV Malbase - Siliguri Line	50.99	+	
		Unit- VI	0.00	-	-	-	
		Total	200.41	Error at Station/Auxiliary Consumption/Losses		3.488%	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	0.00		Unit-I under AMP. Unit -III under breakdown. 400kV MHP-JLG Line I, II & III on standby. 400kV JLG_ALI line II under standby. 132kV MHP_Yurmo line I & II not in service. 400/220kV ICT at JLG not in service
		Unit-II	80.19	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	100.42	400kV MHP - Jigmeling Line - IV	180.09	+	
		-	-	132kV MHP - Yurmo Line - I	0.00		
		-	-	132kV MHP - Yurmo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - I	178.50	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	7.40	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	7.40	+	
		-	-	220kV Tsirang - Jigmeling Line	15.74	+	
		-	-	132kV Gelephu - Salakati Line	-9.78	-	
Total	180.61	Error at Station/Auxiliary Consumption/Losses		0.288%			
3	336MW CHP	Unit- I	54.00	220kV CHP - Birpara Line- I	15.42	+	Unit-II standby. Unit-IV under AMP. 220kV CHP-BIR line II standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	0.00		
		Unit- III	62.00	220kV CHP - Malbase Line- III	53.90	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	32.87	+	
		-	-	220kV Malbase - Birpara Line	-16.72	-	
		-	-	66kV CHP - Chumdo Line	8.63	+	
		-	-	66kV CHP - Gedu Line	3.53	+	
		-	-	3x3MVA, 66/11kV TFR	0.70	+	
Total	116.00	Error at Station/Auxiliary Consumption/Losses		0.819%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	2.86	+	U/S Unit-I & L/S Unit-II Standby 220kV BHP-Tsirang line under shutdown
		Unit- II	4.40	66kV BHP - Lobeyasa Line	9.40	+	
		Total	4.40	220kV BHP - Tsirang Line	0.00		
	40MW BHP (L/S)	Unit- I	8.70	5MVA, 66/11kV TFR	0.82	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	6.50	+	
Total	8.70	Error at Station/Auxiliary Consumption/Losses		0.153%			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	17.23	+	Unit-I standby.
		Unit-II	17.47	220kV DHP - Dagapela Line	0.00	+	
		-	-	220kV Jigmeling - Dagapela Line	0.90	+	
		-	-	5MVA, 220/33kV TFR	0.07	+	
		Total	17.47	Error at Station/Auxiliary Consumption/Losses		0.973%	
6	60MW KHP	Unit- I	15.12	132kV KHP - Nangkhor Line	16.19	+	Unit-III & IV standby.
		Unit-II	15.08	132kV KHP - Kilikhar Line	13.28	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.38	+	
		Unit- IV	0.00	132kV Motanga - Rangia Line	10.27	+	
		Total	30.20	Error at Station/Auxiliary Consumption/Losses		1.157%	

Note: Generation-Load Summary (MW) for April 29, 2021 at 09:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	346.98	214.11	206.88	117.13	7.23
2	Eastern Grid	210.81	47.56	46.69	178.99	0.87
Total		557.79	261.67	253.57	296.12	8.10

Note: Generation-Load Summary for April 29, 2020 at 09:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	538.58	209.64	200.77	313.6	8.87
2	Eastern Grid	295.10	43.92	41.43	266.52	2.49
Total		833.68	253.56	242.20	580.12	11.36

NOTE- BHP & MHP data collected from site

1. The Instantaneous load balance is 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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