

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	April 27, 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	119.92	400kV THP - Siliguri Line - I	82.93	+	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	173.95	+	
		Unit- V	140.45	400kV Malbase - Siliguri Line	57.95	+	
		Unit- VI	0.00	-	-	-	
		Total	260.37	Error at Station/Auxiliary Consumption/Losses		1.340%	
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	66.87	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	100.50	400kV MHP - Jigmeling Line - IV	166.49	+	
		-	-	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	164.80		
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	4.40	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	4.40	+	
		-	-	220kV Tsirang - Jigmeling Line	10.66	+	
		-	-	132kV Gelephu - Salakati Line	-35.36	-	
Total	167.37	Error at Station/Auxiliary Consumption/Losses		0.526%			
3	336MW CHP	Unit- I	59.64	220kV CHP - Birpara Line- I	21.95	+	Unit-III Standby. Unit-IV under AMP. 220kV CHP_BIR line II standby.
		Unit- II	59.74	220kV CHP - Birpara Line- II	0.00		
		Unit- III	0.00	220kV CHP - Malbase Line- III	35.10	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	45.66	+	
		-	-	220kV Malbase - Birpara Line	6.50	+	
		-	-	66kV CHP - Chumdo Line	9.53	+	
		-	-	66kV CHP - Gedu Line	4.32	+	
		-	-	3x3MVA, 66/11kV TFR	1.37	+	
Total	119.38	Error at Station/Auxiliary Consumption/Losses		1.215%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	0.10	+	U/S Unit-I & L/S Unit-II Standby 220kV BHP-Tsirang line under shutdown
		Unit- II	4.00	66kV BHP - Lobeyasa Line	11.30	+	
		Total	4.00	220kV BHP - Tsirang Line	0.00		
	40MW BHP (L/S)	Unit- I	8.30	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	7.00	+	
Total	8.30	Error at Station/Auxiliary Consumption/Losses		0.081%			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	13.33	+	Unit-I Standby.
		Unit-II	13.55	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.80	+	
		-	-	5MVA, 220/33kV TFR	0.08	+	
		Total	13.55	Error at Station/Auxiliary Consumption/Losses		1.033%	
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	15.10	+	Unit-I and Unit-II Standby.
		Unit-II	0.00	132kV KHP - Kilikhar Line	16.95	+	
		Unit- III	16.46	5MVA, 132/11kV TFR	0.41	+	
		Unit- IV	16.42	132kV Motanga - Rangia Line	12.14	+	
		Total	32.88	Error at Station/Auxiliary Consumption/Losses		1.277%	

Note: Generation-Load Summary (MW) for April 27, 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	405.60	225.61	222.32	169.33	3.29
2	Eastern Grid	200.25	69.33	68.03	141.58	1.30
Total		605.85	294.94	290.35	310.91	4.59

Note: Generation-Load Summary for April 27, 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	500.33	240.56	228.06	244.17	12.50
2	Eastern Grid	220.33	66.88	61.50	169.05	5.38
Total		720.66	307.44	289.56	413.22	17.88

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 28, 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	119.71	400kV THP - Siliguri Line - I	76.32	+	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	137.66	+	
		Unit- V	99.67	400kV Malbase - Siliguri Line	58.59	+	
		Unit- VI	0.00		-	-	
		Total	219.38	Error at Station/Auxiliary Consumption/Losses		2.461%	
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 shutdown. 132kV MHP_Yurmoo line I & II not in service. 400/220kV ICT at JLG not in service
		Unit-II	84.91	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00		
		Unit-IV	140.58	400kV MHP - Jigmeling Line - IV	224.34	+	
		-	-	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	222.30	+	
		-	-	400kV Jigmeling - Alipurduar Line - II	0.00		
		-	-	80MVA, 220/132kV ICT - I (HV)	5.30	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	5.30	+	
		-	-	220kV Tsirang - Jigmeling Line	11.73	+	
		-	-	132kV Gelephu - Salakati Line	22.91	+	
Total	225.49	Error at Station/Auxiliary Consumption/Losses		0.510%			
3	336MW CHP	Unit- I	60.20	220kV CHP - Birpara Line- I	9.14	+	Unit-III under shutdown. Unit-IV under AMP. 220kV CHP-BIR line II standby.
		Unit- II	45.85	220kV CHP - Birpara Line- II	0.00		
		Unit- III	0.00	220kV CHP - Malbase Line- III	49.77	+	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	32.92	+	
		-	-	220kV Malbase - Birpara Line	-25.90	-	
		-	-	66kV CHP - Chumdo Line	7.80	+	
		-	-	66kV CHP - Gedu Line	4.09	+	
		-	-	3x3MVA, 66/11kV TFR	0.84	+	
Total	106.05	Error at Station/Auxiliary Consumption/Losses		1.405%			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	3.40	+	U/S Unit-I & L/S Unit-II Standby 220kV BHP-Tsirang line under shutdown
		Unit- II	4.10	66kV BHP - Lobeyasa Line	8.20	+	
		Total	4.10	220kV BHP - Tsirang Line	0.00		
	40MW BHP (L/S)	Unit- I	8.30	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	0.00	30MVA ICT, 220/66kV (HV)	3.57	+	
Total	8.30	Error at Station/Auxiliary Consumption/Losses		-0.726%			
5	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	13.23	+	Unit-I standby.
		Unit-II	13.43	220kV DHP - Dagapela Line	0.00	+	
		-	-	220kV Jigmeling - Dagapela Line	1.00	+	
		-	-	5MVA, 220/33kV TFR	0.07	+	
		Total	13.43	Error at Station/Auxiliary Consumption/Losses		0.968%	
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	33.58	+	Unit-I standby. 132kV Motanga-Rangia line hand tripped at 8.20hrs due to earthquake.
		Unit-II	13.11	132kV KHP - Kilikhar Line	4.90	+	
		Unit- III	13.11	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	13.09	132kV Motanga - Rangia Line	0.00		
		Total	39.31	Error at Station/Auxiliary Consumption/Losses		1.297%	

Note: Generation-Load Summary (MW) for April 28, 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	351.26	221.38	215.45	118.15	5.93
2	Eastern Grid	264.80	31.32	29.66	245.21	1.66
Total		616.06	252.70	245.11	363.36	7.59

Note: Generation-Load Summary for April 28, 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	441.50	209.75	207.21	219.86	2.54
2	Eastern Grid	406.37	61.23	57.67	357.03	3.56
Total		847.87	270.98	264.88	576.89	6.10

NOTE- BHP & MHP data collected from site

- 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:
 - 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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