

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	March 17, 2021
Hours:	19:00 Hours

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

Sl. No.	Hydropower Plant	Unit	MW	Name of Feeders	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	99.42	400kV THP - Siliguri Fdr- I	0.00		Unit-III on standby. Unit-IV, V & VI under shutdown. 400kV THP-SIL Fdr I & IV on standby.
		Unit- II	67.95	400kV THP - Siliguri Fdr- II	45.19	+	
		Unit- III	0.00	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	120.80	+	
		Unit- V	0.00	400kV Malbase - Siliguri	25.75	+	
		Unit- VI	0.00	-	-	-	
		Total	167.37	Error at Station/Auxiliary Consumption/Losses	0.825%		
2	720MW MHP	Unit-I	120.25	400kV MHP - Jigmeling Fdr - I	0.00		Unit-II under maintenance. Unit-III under breakdown. Unit- IV on standby. 400kV MHP-JLG Fdr I, II & III on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Fdr - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	0.00	400kV MHP - Jigmeling Fdr - IV	119.73	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	120.25	Error at Station/Auxiliary Consumption/Losses	0.432%		
3	336MW CHP	Unit- I	59.73	220kV CHP - Birpara Fdr- I	0.00		Unit-III & IV under AMP. 220kV CHP-BIR I under AMP.
		Unit- II	65.65	220kV CHP - Birpara Fdr- II	1.71	+	
		Unit- III	0.00	220kV CHP - Malbase Fdr- III	37.88	+	
		Unit- IV	0.00	220kV CHP - Semtokha Fdr- IV	55.21	+	
		-	-	220kV Malbase - Birpara Fdr.	-25.91	-	
		-	-	66kV CHP - Chumdo Fdr.	20.42	+	
		-	-	66kV CHP - Gedu Fdr.	2.66	+	
		-	-	3x3MVA, 66/11kV TFR	1.80	+	
		Total	125.38	Error at Station/Auxiliary Consumption/Losses	4.546%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	-2.55	-	U/S Unit-I standby. L/S Unit-I standby
		Unit- II	4.90	66kV BHP - Lobeysa Fdr.	12.53	+	
		Total	4.90	220kV BHP - Tsirang Fdr.	4.42	+	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.80	+	
		Unit- II	10.46	30MVA ICT, 220/66kV			
		Total	10.46	Error at Station/Auxiliary Consumption/Losses	1.042%		
5	126MW DHPC	Unit-I	17.66	220kV DHPC - Tsirang Fdr.	17.35	+	Unit-II AMP
		Unit-II	0.00	220kV Jigmeling - Dagapela Fdr.	2.40	+	
		-	-	5MVA, 220/33kV TFR			
		Total	17.66	Error at Station/Auxiliary Consumption/Losses	1.755%		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	8.90	+	Unit-III under AMP. Unit- I on standby.
		Unit-II	12.10	132kV KHP - Kilihar Fdr- II	14.50	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.55	+	
		Unit- IV	12.10	132kV Gelephu - Salakati Fdr.	-31.36	-	
		-	-	132kV Motanga - Rangia Fdr.	-3.72	-	
		-	-	220kV Tsirang - Jigmeling	19.08	+	
		Total	24.20	Error at Station/Auxiliary Consumption/Losses	1.037%		

Note: Generation-Load Summary for March 17, 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	325.77	259.95	254.80	46.74	5.15
2	Eastern Grid	144.45	78.88	78.11	84.65	0.77
	Total	470.22	338.83	332.91	131.39	5.92

Note: Generation-Load Summary for March 17, 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	331.92	279.11	273.03	29.87	6.08
2	Eastern Grid	114.55	84.22	83.59	53.27	0.63
	Total	446.47	363.33	356.62	83.14	6.71

NOTE- KHP, MHP & Motanga 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.
 - 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

Maximum Load/Demand till Date

Date:	March 18, 2021
Hours:	09:00 Hours

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

Sl. No.	Hydropower Plant	Unit	MW	Name of Feeders	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	98.88	400kV THP - Siliguri Fdr- I	0.00		Unit-III on standby. Unit-IV,V &VI under shutdown. 400kV THP-SIL Fdr I on standby. 400kV Tala-SIL IV under AMP.
		Unit- II	68.14	400kV THP - Siliguri Fdr- II	43.99	+	
		Unit- III	0.00	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	118.96	+	
		Unit- V	0.00	400kV Malbase - Siliguri	24.63	+	
		Unit- VI	0.00	-	-	-	
		Total	167.02	Error at Station/Auxiliary Consumption/Losses	2.437%		
2	720MW MHP	Unit-I	134.81	400kV MHP - Jigmeling Fdr - I	0.00		Unit-II under maintenance. Unit-III under breakdown. Unit IV on Standby 400kV MHP-JLG Fdr I, II & III on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Fdr - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	0.00	400kV MHP - Jigmeling Fdr - IV	134.23	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	134.81	Error at Station/Auxiliary Consumption/Losses	0.430%		
3	336MW CHP	Unit- I	31.74	220kV CHP - Birpara Fdr- I	0.00		Total Shutdown of CHP Units. Unit-III & IV under AMP 220kV CHP-BIR I on standby.
		Unit- II	39.79	220kV CHP - Birpara Fdr- II	-10.40	-	
		Unit- III	0.00	220kV CHP - Malbase Fdr- III	29.53	+	
		Unit- IV	0.00	220kV CHP - Semtokha Fdr- IV	34.52	+	
		-	-	220kV Malbase - Birpara Fdr.	-39.13	-	
		-	-	66kV CHP - Chumdo Fdr.	13.12	+	
		-	-	66kV CHP - Gedu Fdr.	2.97	+	
		-	-	3x3MVA, 66/11kV TFR	1.12	+	
		Total	71.53	Error at Station/Auxiliary Consumption/Losses	0.937%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	4.95	+	U/S Unit-I on standby. L/S Unit-I on standby.
		Unit- II	4.87	66kV BHP - Lobeysa Fdr.	9.75	+	
		Total	4.87	220kV BHP - Tsirang Fdr.	0.21	-	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.37	+	
		Unit- II	10.71	30MVA ICT, 220/66kV			
		Total	10.71	Error at Station/Auxiliary Consumption/Losses	1.926%		
5	126MW DHPC	Unit-I	16.82	220kV DHPC - Tsirang Fdr.	16.61	+	Unit-II under AMP..
		Unit-II	0.00	220kV Jigmeling - Dagapela Fdr.	1.10	+	
		-	-	5MVA, 220/33kV TFR			
		Total	16.82	Error at Station/Auxiliary Consumption/Losses	1.249%		
6	60MW KHP	Unit- I	10.50	132kV KHP - Nangkhon Fdr- I	8.09	+	Unit III under AMP Unit-IV on standby
		Unit-II	10.10	132kV KHP - Kilikhar Fdr- II	11.87	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.45	+	
		Unit- IV	0.00	132kV Gelephu - Salakati Fdr.	-27.21	-	
		-	-	132kV Motanga - Rangia Fdr.	4.08	+	
		-	-	220kV Tsirang - Jigmeling	14.70	+	
		Total	20.60	Error at Station/Auxiliary Consumption/Losses	0.922%		

Note: Generation-Load summary for March 18, 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	270.95	237.16	233.01	19.09	4.15
2	Eastern Grid	155.41	59.01	58.24	111.10	0.77
	Total	426.36	296.17	291.25	130.19	4.92

Note: Generation-Load Summary for March 18, 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	221.49	229.38	226.18	-19.61	3.20
2	Eastern Grid	116.53	63.36	62.86	64.89	0.50
	Total	338.02	292.74	289.04	45.28	3.70

NOTE: KHP,MHP & Motanga 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.

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