

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	March 18, 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	99.08	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	70.41	400kV THP - Siliguri Fdr- II	46.10	+	
		Unit- III	0.00	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	116.74	+	
		Unit- V	0.00	400kV Malbase - Siliguri	30.43	+	
		Unit- VI	0.00	-	-	-	
		Total	169.49	Error at Station/Auxiliary Consumption/Losses	3.924%		
2	720MW MHP	Unit-I	120.14	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	119.27	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	120.14	Error at Station/Auxiliary Consumption/Losses	0.725%		
3	336MW CHP	Unit- I	60.45	220kV CHP - Birpara Fdr- I	0.00		Unit-III & IV under AMP. 220kV CHP-BIR I under AMP.
		Unit- II	61.94	220kV CHP - Birpara Fdr- II	4.85	+	
		Unit- III	0.00	220kV CHP - Malbase Fdr- III	37.49	+	
		Unit- IV	0.00	220kV CHP - Semtokha Fdr- IV	59.66	+	
		-	-	220kV Malbase - Birpara Fdr.	-22.10	-	
		-	-	66kV CHP - Chumdo Fdr.	14.35	+	
		-	-	66kV CHP - Gedu Fdr.	4.09	+	
		-	-	3x3MVA, 66/11kV TFR	1.80	+	
		Total	122.39	Error at Station/Auxiliary Consumption/Losses	0.123%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	-0.63	-	U/S Unit-I standby. L/S Unit-I standby
		Unit- II	4.84	66kV BHP - Lobeysa Fdr.	11.13	+	
	Total	4.84	220kV BHP - Tsirang Fdr.	3.94	+		
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.70	+	
Unit- II		10.56	30MVA ICT, 220/66kV				
		Total	10.56	Error at Station/Auxiliary Consumption/Losses	1.688%		
5	126MW DHPC	Unit-I	17.15	220kV DHPC - Tsirang Fdr.	16.95	+	Unit-II AMP
		Unit-II	0.00	220kV Jigmeling - Dagapela Fdr.	2.40	+	
		-	-	5MVA, 220/33kV TFR			
		Total	17.15	Error at Station/Auxiliary Consumption/Losses	1.166%		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	8.27	+	Unit- I on standby. Unit-III under AMP.
		Unit-II	13.06	132kV KHP - Kilihar Fdr- II	16.60	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.43	+	
		Unit- IV	13.06	132kV Gelephu - Salakati Fdr.	-34.83	-	
		-	-	132kV Motanga - Rangia Fdr.	14.11	+	
		-	-	220kV Tsirang - Jigmeling	18.74	+	
		Total	26.12	Error at Station/Auxiliary Consumption/Losses	3.132%		

Note: Generation-Load Summary for March 18, 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	324.43	246.41	241.55	59.28	4.86
2	Eastern Grid	146.26	66.45	64.76	98.55	1.69
	Total	470.69	312.86	306.31	157.83	6.55

Note: Generation-Load Summary for March 18, 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	342.59	269.87	263.71	50.08	6.16
2	Eastern Grid	114.35	88.15	86.12	48.84	2.03
	Total	456.94	358.02	349.83	98.92	8.19

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 19, 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	148.51	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	67.03	400kV THP - Siliguri Fdr- II	65.31	+	
		Unit- III	0.00	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	144.79	+	
		Unit- V	0.00	400kV Malbase - Siliguri	44.60	+	
		Unit- VI	0.00	-	-	-	
		Total	215.54	Error at Station/Auxiliary Consumption/Losses	2.524%		
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	31.16	220kV CHP - Birpara Fdr- I	0.00		Unit-III & IV under AMP 220kV CHP-BIR I under AMP.
		Unit- II	39.31	220kV CHP - Birpara Fdr- II	-6.83	-	
		Unit- III	0.00	220kV CHP - Malbase Fdr- III	29.12	+	
		Unit- IV	0.00	220kV CHP - Semtokha Fdr- IV	33.81	+	
		-	-	220kV Malbase - Birpara Fdr.	-33.36	-	
		-	-	66kV CHP - Chumdo Fdr.	9.44	+	
		-	-	66kV CHP - Gedu Fdr.	3.20	+	
		-	-	3x3MVA, 66/11kV TFR	1.03	+	
		Total	70.47	Error at Station/Auxiliary Consumption/Losses	0.993%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	9.31	+	U/S Unit-I on standby. L/S Unit-I on standby.
		Unit- II	4.93	66kV BHP - Lobeysa Fdr.	7.68	+	
	Total	4.93	220kV BHP - Tsirang Fdr.	-1.45	-		
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.36	+	
Unit- II		10.92	30MVA ICT, 220/66kV				
		Total	10.92	Error at Station/Auxiliary Consumption/Losses	-0.315%		
5	126MW DHPC	Unit-I	16.63	220kV DHPC - Tsirang Fdr.	16.40	+	Unit-II under AMP..
		Unit-II	0.00	220kV Jigmeling - Dagapela Fdr.	1.10	+	
		-	-	5MVA, 220/33kV TFR			
		Total	16.63	Error at Station/Auxiliary Consumption/Losses	1.383%		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	11.11	+	Unit III under AMP Unit-I on standby
		Unit-II	12.12	132kV KHP - Kilikhar Fdr- II	12.51	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	12.06	132kV Gelephu - Salakati Fdr.	-26.11	-	
		-	-	132kV Motanga - Rangia Fdr.	12.82	+	
		-	-	220kV Tsirang - Jigmeling	13.60	+	
		Total	24.18	Error at Station/Auxiliary Consumption/Losses	0.662%		

Note: Generation-Load summary for March 19, 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	318.49	235.17	229.95	69.72	5.22
2	Eastern Grid	158.99	51.65	50.91	120.94	0.74
	Total	477.48	286.82	280.86	190.66	5.96

Note: Generation-Load Summary for March 19, 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	212.39	232.68	229.88	-32.01	2.80
2	Eastern Grid	124.28	62.81	60.61	73.19	2.20
	Total	336.67	295.49	290.49	41.18	5.00

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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