

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	March 19, 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	118.78	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	68.80	400kV THP - Siliguri Fdr- II	51.16	+	
		Unit- III	0.00	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	133.88	+	
		Unit- V	0.00	400kV Malbase - Siliguri	29.26	+	
		Unit- VI	0.00	-	-	-	
		Total	187.58	Error at Station/Auxiliary Consumption/Losses	1.354%		
2	720MW MHP	Unit-I	115.47	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	114.18	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	115.47	Error at Station/Auxiliary Consumption/Losses	1.117%		
3	336MW CHP	Unit- I	59.10	220kV CHP - Birpara Fdr- I	0.00		Unit-III & IV under AMP. 220kV CHP-BIR I under AMP.
		Unit- II	60.08	220kV CHP - Birpara Fdr- II	0.00		
		Unit- III	0.00	220kV CHP - Malbase Fdr- III	32.57	+	
		Unit- IV	0.00	220kV CHP - Semtokha Fdr- IV	65.90	+	
		-	-	220kV Malbase - Birpara Fdr.	-25.00	-	
		-	-	66kV CHP - Chumdo Fdr.	13.54	+	
		-	-	66kV CHP - Gedu Fdr.	4.12	+	
		-	-	3x3MVA, 66/11kV TFR	1.82	+	
		Total	119.18	Error at Station/Auxiliary Consumption/Losses	1.032%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	-13.11	-	U/S Unit-I standby. L/S Unit-I standby
		Unit- II	4.76	66kV BHP - Lobeysa Fdr.	13.86	+	
		Total	4.76	220kV BHP - Tsirang Fdr.	13.45	+	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.73	+	
		Unit- II	10.45	30MVA ICT, 220/66kV			
		Total	10.45	Error at Station/Auxiliary Consumption/Losses	1.841%		
5	126MW DHPC	Unit-I	17.16	220kV DHPC - Tsirang Fdr.	16.95	+	Unit-II AMP
		Unit-II	0.00	220kV Jigmeling - Dagapela Fdr.	2.40	+	
		-	-	5MVA, 220/33kV TFR			
		Total	17.16	Error at Station/Auxiliary Consumption/Losses	1.224%		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	6.86	+	Unit- I on standby. Unit-III under AMP.
		Unit-II	12.07	132kV KHP - Kilihar Fdr- II	16.37	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.43	+	
		Unit- IV	12.07	132kV Gelephu - Salakati Fdr.	-35.83	-	
		-	-	132kV Motanga - Rangia Fdr.	8.13	+	
		-	-	220kV Tsirang - Jigmeling	27.95	+	
		Total	24.14	Error at Station/Auxiliary Consumption/Losses	1.980%		

Note: Generation-Load Summary for March 19, 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	339.13	255.76	253.90	55.42	1.86
2	Eastern Grid	139.61	81.08	79.31	86.48	1.77
Total		478.74	336.84	333.21	141.90	3.63

Note: Generation-Load Summary for March 19, 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	344.12	248.01	242.28	59.11	5.73
2	Eastern Grid	118.93	88.19	86.37	67.74	1.82
Total		463.05	336.20	328.65	126.85	7.55

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.
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:	March 20, 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	120.70	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	71.07	400kV THP - Siliguri Fdr- II	57.04	+	
		Unit- III	0.00	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	131.83	+	
		Unit- V	0.00	400kV Malbase - Siliguri	22.00	+	
		Unit- VI	0.00	-	-	-	
		Total	191.77	Error at Station/Auxiliary Consumption/Losses	1.512%		
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Fdr - I	0.00		Unit I on Standby. Unit-II under maintenance. Unit-III under breakdown. 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	180.33	400kV MHP - Jigmeling Fdr - IV	179.79	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	180.33	Error at Station/Auxiliary Consumption/Losses	0.299%		
3	336MW CHP	Unit- I	33.80	220kV CHP - Birpara Fdr- I	0.00		Unit-III & IV under AMP. 220kV CHP-BIR I under AMP.
		Unit- II	36.04	220kV CHP - Birpara Fdr- II	-11.96	-	
		Unit- III	0.00	220kV CHP - Malbase Fdr- III	55.01	+	
		Unit- IV	0.00	220kV CHP - Semtokha Fdr- IV	12.07	+	
		-	-	220kV Malbase - Birpara Fdr.	-21.00	-	
		-	-	66kV CHP - Chumdo Fdr.	7.80	+	
		-	-	66kV CHP - Gedu Fdr.	4.50	+	
		-	-	3x3MVA, 66/11kV TFR	1.24	+	
		Total	69.84	Error at Station/Auxiliary Consumption/Losses	1.690%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	2.95	+	U/S Unit-I on standby. L/S Unit-I on standby.
		Unit- II	4.87	66kV BHP - Lobeysa Fdr.	9.16	+	
		Total	4.87	220kV BHP - Tsirang Fdr.	2.49	+	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.37	+	
		Unit- II	10.45	30MVA ICT, 220/66kV			
		Total	10.45	Error at Station/Auxiliary Consumption/Losses	2.285%		
5	126MW DHPC	Unit-I	16.75	220kV DHPC - Tsirang Fdr.	16.57	+	Unit-II under AMP..
		Unit-II	0.00	220kV Jigmeling - Dagapela Fdr.	1.20	+	
		-	-	5MVA, 220/33kV TFR			
		Total	16.75	Error at Station/Auxiliary Consumption/Losses	1.075%		
6	60MW KHP	Unit- I	10.10	132kV KHP - Nangkhon Fdr- I	8.94	+	Unit III under AMP. Unit-IV on standby
		Unit-II	10.10	132kV KHP - Kilikhar Fdr- II	10.72	+	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.20	+	
		Unit- IV	0.00	132kV Gelephu - Salakati Fdr.	-26.67	-	
		-	-	132kV Motanga - Rangia Fdr.	-1.72	-	
		-	-	220kV Tsirang - Jigmeling	15.20	+	
		Total	20.20	Error at Station/Auxiliary Consumption/Losses	1.683%		

Note: Generation-Load summary for March 20, 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	293.68	232.40	228.99	46.08	3.41
2	Eastern Grid	200.53	64.33	63.45	151.40	0.88
	Total	494.21	296.73	292.44	197.48	4.29

Note: Generation-Load Summary for March 20, 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	222.50	232.38	232.81	-38.54	-0.43
2	Eastern Grid	114.78	76.43	74.99	67.01	1.44
	Total	337.28	308.81	307.80	28.47	1.01

NOTE: KHP, CHP, 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.
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