

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	October 13, 2020
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	168.65	400kV THP - Siliguri Fdr- I	169.68	+	Unit-IV standby.
		Unit- II	139.23	400kV THP - Siliguri Fdr- II	168.58	+	
		Unit- III	109.04	400kV THP - Siliguri Fdr- IV	164.68	+	
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	212.39	+	
		Unit- V	139.70	400kV Malbase - Siliguri	150.11	+	
		Unit- VI	170.88	-	-	-	
		Total	727.50	Error at Station/Auxiliary Consumption/Losses	1.673%		
2	720MW MHP	Unit-I	149.11	400kV MHP - Jigmeling Fdr - I	217.92	+	Unit-III under maintenance (22/09/20-30/11/2020). 400kV MHP-JLG Fdr II under Breakdown. 400kV MHP-JLG Fdr III under standby.
		Unit-II	149.23	400kV MHP - Jigmeling Fdr - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	140.22	400kV MHP - Jigmeling Fdr - IV	219.18	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	438.56	Error at Station/Auxiliary Consumption/Losses	0.333%		
3	336MW CHP	Unit- I	84.10	220kV CHP - Birpara Fdr- I	97.94	+	
		Unit- II	74.77	220kV CHP - Birpara Fdr- II	97.52	+	
		Unit- III	84.75	220kV CHP - Malbase Fdr- III	123.23	+	
		Unit- IV	82.14	220kV CHP - Semtokha Fdr- IV	-8.28	-	
		-	-	220kV Malbase - Birpara Fdr.	67.36	+	
		-	-	66kV CHP - Chumdo Fdr.	6.52	+	
		-	-	66kV CHP - Gedu Fdr.	6.69	+	
		-	-	3x3MVA, 66/11kV TFR	1.40	+	
		Total	325.76	Error at Station/Auxiliary Consumption/Losses	0.227%		
4	24MW BHP (U/S)	Unit- I	10.87	220kV BHP - Semtokha Fdr.	39.86	+	
		Unit- II	10.87	66kV BHP - Lobeysa Fdr.	16.24	+	
		Total	21.74	220kV BHP - Tsirang Fdr.	4.66	+	
	40MW BHP (L/S)	Unit- I	19.24	5MVA, 66/11kV TFR	0.80	+	
		Unit- II	19.70	30MVA ICT, 220/66kV			
		Total	38.94	Error at Station/Auxiliary Consumption/Losses	-1.450%		
5	126MW DHPC	Unit-I	39.19	220kV DHPC - Tsirang Fdr.	77.94	+	
		Unit-II	39.25	220kV Jigmeling - Dagapela Fdr.	2.00	+	
		-	-	5MVA, 220/33kV TFR			
		Total	78.44	Error at Station/Auxiliary Consumption/Losses	0.637%		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	36.97	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	27.64	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	28.65	+	
		-	-	132kV Motanga - Rangia Fdr.	50.68	+	
		-	-	220kV Tsirang - Jigmeling	80.16	+	
		Total	66.00	Error at Station/Auxiliary Consumption/Losses	1.621%		

Note: Generation-Load Summary for October 13, 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	1,192.38	196.35	185.82	915.87	10.53
2	Eastern Grid	504.56	68.29	65.76	516.43	2.53
	Total	1,696.94	264.64	251.58	1,432.30	13.06

Note: Generation-Load Summary for October 13, 2019 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	1116	231.22	224.86	817.33	6.36
2	Eastern Grid	487.81	61.08	56.65	494.18	4.43
	Total	1,603.81	292.30	281.51	1,311.51	10.79

NOTE: KHP & 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.
 - 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:	October 14, 2020
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	169.64	400kV THP - Siliguri Fdr- I	161.95	+	Unit-IV standby.
		Unit- II	118.96	400kV THP - Siliguri Fdr- II	159.72	+	
		Unit- III	100.94	400kV THP - Siliguri Fdr- IV	155.65	+	
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	171.67	+	
		Unit- V	99.46	400kV Malbase - Siliguri	149.21	+	
		Unit- VI	169.49	-	-	-	
		Total	658.49	Error at Station/Auxiliary Consumption/Losses	1.443%		
2	720MW MHP	Unit-I	135.60	400kV MHP - Jigmeling Fdr - I	203.59	+	Unit-III under maintenance (22/09/20-30/11/2020). 400kV MHP-JLG Fdr II under Breakdown. 400kV MHP-JLG Fdr III under standby.
		Unit-II	135.20	400kV MHP - Jigmeling Fdr - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	140.56	400kV MHP - Jigmeling Fdr - IV	204.78	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	411.36	Error at Station/Auxiliary Consumption/Losses	0.727%		
3	336MW CHP	Unit- I	82.94	220kV CHP - Birpara Fdr- I	99.00	+	
		Unit- II	74.09	220kV CHP - Birpara Fdr- II	98.88	+	
		Unit- III	83.60	220kV CHP - Malbase Fdr- III	161.21	+	
		Unit- IV	86.31	220kV CHP - Semtokha Fdr- IV	-43.66	-	
		-	-	220kV Malbase - Birpara Fdr.	39.63	+	
		-	-	66kV CHP - Chumdo Fdr.	2.25	+	
		-	-	66kV CHP - Gedu Fdr.	7.27	+	
		-	-	3x3MVA, 66/11kV TFR	0.77	+	
		Total	326.94	Error at Station/Auxiliary Consumption/Losses	0.373%		
4	24MW BHP (U/S)	Unit- I	10.78	220kV BHP - Semtokha Fdr.	63.04	+	
		Unit- II	10.78	66kV BHP - Lobeysa Fdr.	14.29	+	
		Total	21.56	220kV BHP - Tsirang Fdr.	-17.21	-	
	40MW BHP (L/S)	Unit- I	18.98	5MVA, 66/11kV TFR	0.36	+	
		Unit- II	19.54	30MVA ICT, 220/66kV			
		Total	38.52	Error at Station/Auxiliary Consumption/Losses	-0.666%		
5	126MW DHPC	Unit-I	38.71	220kV DHPC - Tsirang Fdr.	77.50	+	
		Unit-II	39.25	220kV Jigmeling - Dagapela Fdr.	1.00	+	
		-	-	5MVA, 220/33kV TFR			
		Total	77.96	Error at Station/Auxiliary Consumption/Losses	0.590%		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	43.13	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	21.83	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	42.87	+	
		-	-	132kV Motanga - Rangia Fdr.	50.68	+	
		-	-	220kV Tsirang - Jigmeling	57.81	+	
		Total	66.00	Error at Station/Auxiliary Consumption/Losses	0.970%		

Note: Generation-Load summary for October 14, 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	1,123.47	201.62	191.84	864.04	9.78
2	Eastern Grid	477.36	33.25	29.62	501.92	3.63
	Total	1,600.83	234.87	221.46	1,365.96	13.41

Note: Generation-Load Summary for October 14, 2019 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	999.12	218.01	209.34	723.51	8.67
2	Eastern Grid	478.18	44.21	44.16	491.57	0.05
	Total	1,477.30	262.22	253.50	1,215.08	8.72

NOTES: KHP, Motanga & 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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