

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	October 10, 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	167.83	400kV THP - Siliguri Fdr- I	182.31	+	Unit-IV standby.
		Unit- II	167.34	400kV THP - Siliguri Fdr- II	179.50	+	
		Unit- III	99.69	400kV THP - Siliguri Fdr- IV	175.96	+	
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	225.64	+	
		Unit- V	169.43	400kV Malbase - Siliguri	160.62	+	
		Unit- VI	169.98	-	-	-	
		Total	774.27	Error at Station/Auxiliary Consumption/Losses	1.403%		
2	720MW MHP	Unit-I	140.19	400kV MHP - Jigmeling Fdr - I	220.87	+	Unit-III under Shutdown (22/09/20-30/11/2020). 400kV MHP-JLG Fdr II under Breakdown. 400kV MHP-JLG Fdr III under standby.
		Unit-II	140.11	400kV MHP - Jigmeling Fdr - II	0.00	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00	+	
		Unit-IV	165.58	400kV MHP - Jigmeling Fdr - IV	222.17	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	445.88	Error at Station/Auxiliary Consumption/Losses	0.637%		
3	336MW CHP	Unit- I	91.53	220kV CHP - Birpara Fdr- I	112.02	+	
		Unit- II	91.63	220kV CHP - Birpara Fdr- II	112.23	+	
		Unit- III	91.30	220kV CHP - Malbase Fdr- III	137.51	+	
		Unit- IV	91.07	220kV CHP - Semtokha Fdr- IV	-10.70	-	
		-	-	220kV Malbase - Birpara Fdr.	80.80	+	
		-	-	66kV CHP - Chumdo Fdr.	6.56	+	
		-	-	66kV CHP - Gedu Fdr.	6.24	+	
		-	-	3x3MVA, 66/11kV TFR	1.20	+	
		Total	365.53	Error at Station/Auxiliary Consumption/Losses	0.129%		
4	24MW BHP (U/S)	Unit- I	11.81	220kV BHP - Semtokha Fdr.	40.36	+	
		Unit- II	11.81	66kV BHP - Lobeysa Fdr.	16.78	+	
		Total	23.62	220kV BHP - Tsirang Fdr.	6.47	+	
	40MW BHP (L/S)	Unit- I	20.12	5MVA, 66/11kV TFR	0.70	+	
		Unit- II	20.43	30MVA ICT, 220/66kV			
		Total	40.55	Error at Station/Auxiliary Consumption/Losses	-0.218%		
5	126MW DHPC	Unit-I	44.22	220kV DHPC - Tsirang Fdr.	87.00	+	
		Unit-II	43.24	220kV Jigmeling - Dagapela Fdr.	2.20	+	
		-	-	5MVA, 220/33kV TFR			
		Total	87.46	Error at Station/Auxiliary Consumption/Losses	0.526%		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	37.20	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	27.78	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.38	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	40.62	+	
		-	-	132kV Motanga - Rangia Fdr.	57.77	+	
		-	-	220kV Tsirang - Jigmeling	91.07	+	
		Total	66.00	Error at Station/Auxiliary Consumption/Losses	0.970%		

Note: Generation-Load Summary for October 10, 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	1,291.43	196.92	187.47	1,003.44	9.45
2	Eastern Grid	511.88	61.52	58.04	541.43	3.48
	Total	1,803.31	258.44	245.51	1,544.87	12.93

Note: Generation-Load Summary for October 10, 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	1216.65	218.06	207.08	928.53	10.98
2	Eastern Grid	337.79	63.19	56.16	344.66	7.03
	Total	1,554.44	281.25	263.24	1,273.19	18.01

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 11, 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	169.69	400kV THP - Siliguri Fdr- I	191.64	+	Unit-IV standby.
		Unit- II	169.47	400kV THP - Siliguri Fdr- II	190.38	+	
		Unit- III	99.98	400kV THP - Siliguri Fdr- IV	184.78	+	
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	196.97	+	
		Unit- V	169.13	400kV Malbase - Siliguri	178.98	+	
		Unit- VI	169.63	-	-	-	
		Total	777.90	Error at Station/Auxiliary Consumption/Losses	1.816%		
2	720MW MHP	Unit-I	140.17	400kV MHP - Jigmeling Fdr - I	229.09	+	Unit-III under Shutdown (22/09/20-30/11/2020). 400kV MHP-JLG Fdr II under Breakdown. 400kV MHP-JLG Fdr III under standby.
		Unit-II	140.21	400kV MHP - Jigmeling Fdr - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	180.28	400kV MHP - Jigmeling Fdr - IV	230.81	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	460.66	Error at Station/Auxiliary Consumption/Losses	0.165%		
3	336MW CHP	Unit- I	91.75	220kV CHP - Birpara Fdr- I	112.96	+	
		Unit- II	91.26	220kV CHP - Birpara Fdr- II	112.94	+	
		Unit- III	91.22	220kV CHP - Malbase Fdr- III	173.57	+	
		Unit- IV	91.57	220kV CHP - Semtokha Fdr- IV	-42.73	-	
		-	-	220kV Malbase - Birpara Fdr.	52.52	+	
		-	-	66kV CHP - Chumdo Fdr.	2.82	+	
		-	-	66kV CHP - Gedu Fdr.	6.19	+	
		-	-	3x3MVA, 66/11kV TFR	0.86	+	
		Total	365.80	Error at Station/Auxiliary Consumption/Losses	-0.221%		
4	24MW BHP (U/S)	Unit- I	11.69	220kV BHP - Semtokha Fdr.	63.78	+	
		Unit- II	11.69	66kV BHP - Lobeysa Fdr.	15.44	+	
		Total	23.38	220kV BHP - Tsirang Fdr.	-16.06	+	
	40MW BHP (L/S)	Unit- I	19.73	5MVA, 66/11kV TFR	0.40	+	
		Unit- II	20.10	30MVA ICT, 220/66kV			
		Total	39.83	Error at Station/Auxiliary Consumption/Losses	-0.554%		
5	126MW DHPC	Unit-I	42.74	220kV DHPC - Tsirang Fdr.	85.55	+	
		Unit-II	43.27	220kV Jigmeling - Dagapela Fdr.	1.20	+	
		-	-	5MVA, 220/33kV TFR			
		Total	86.01	Error at Station/Auxiliary Consumption/Losses	0.535%		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	41.41	-	
		Unit-II	16.50	132kV KHP - Kilihar Fdr- II	23.05	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.31	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	45.90	+	
		-	-	132kV Motanga - Rangia Fdr.	49.70	+	
		-	-	220kV Tsirang - Jigmeling	66.76	+	
		Total	66.00	Error at Station/Auxiliary Consumption/Losses	1.864%		

Note: Generation-Load summary for October 11, 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	1,292.92	201.96	189.73	1,024.20	12.23
2	Eastern Grid	526.66	37.92	35.93	555.50	1.99
	Total	1,819.58	239.88	225.66	1,579.70	14.22

Note: Generation-Load Summary for October 11, 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	1218.88	221.76	209.50	940.47	12.26
2	Eastern Grid	533.71	46.19	43.60	544.17	2.59
	Total	1,752.59	267.95	253.10	1,484.64	14.85

NOTES: KHP & MHP datas 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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