

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	December 21, 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	90.00	400kV THP - Siliguri Fdr- I	80.00	+	Unit-II & V under shutdown. Unit-III & IV on standby. 400kV THP-SIL Fdr II & IV on Standby.
		Unit- II	0.00	400kV THP - Siliguri Fdr- II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	142.00	+	
		Unit- V	0.00	400kV Malbase - Siliguri	63.00	+	
		Unit- VI	140.00	-	-	-	
		Total	230.00	Error at Station/Auxiliary Consumption/Losses	3.478%		
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Fdr - I	0.00		Unit-I on standby. Unit-II under shutdown. Unit-III under breakdown. 400kV MHP-JLG Fdr I & III under Standby.
		Unit-II	0.00	400kV MHP - Jigmeling Fdr - II	63.79	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	128.81	400kV MHP - Jigmeling Fdr - IV	63.89	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	128.81	Error at Station/Auxiliary Consumption/Losses	0.877%		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Fdr- I	5.10	+	Unit I & II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Fdr- II	5.10	+	
		Unit- III	57.35	220kV CHP - Malbase Fdr- III	27.00	+	
		Unit- IV	61.37	220kV CHP - Semtokha Fdr- IV	58.70	+	
		-	-	220kV Malbase - Birpara Fdr.	-13.00	-	
		-	-	66kV CHP - Chumdo Fdr.	16.70	+	
		-	-	66kV CHP - Gedu Fdr.	2.60	+	
		-	-	3x3MVA, 66/11kV TFR	2.20	+	
		Total	118.72	Error at Station/Auxiliary Consumption/Losses	1.112%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	11.60	+	U/S Unit-I & L/S Unit-I under AMP.
		Unit- II	8.40	66kV BHP - Lobeysa Fdr.	16.80	+	
		Total	8.40	220kV BHP - Tsirang Fdr.	-4.26	-	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	17.10	30MVA ICT, 220/66kV			
		Total	17.10	Error at Station/Auxiliary Consumption/Losses	1.843%		
5	126MW DHPC	Unit-I	0.00	220kV DHPC - Tsirang Fdr.	27.97	+	Unit-I on standby.
		Unit-II	28.19	220kV Jigmeling - Dagapela Fdr.	2.60	+	
		-	-	5MVA, 220/33kV TFR			
		Total	28.19	Error at Station/Auxiliary Consumption/Losses	0.780%		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	10.07	+	Unit-I under Annual Maintenance. Unit-II on standby.
		Unit-II	0.00	132kV KHP - Kilihar Fdr- II	13.08	+	
		Unit- III	12.10	5MVA, 132/11kV TFR	0.37	+	
		Unit- IV	12.12	132kV Gelephu - Salakati Fdr.	-19.60	-	
		-	-	132kV Motanga - Rangia Fdr.	1.60	+	
		-	-	220kV Tsirang - Jigmeling	19.50	+	
		Total	24.22	Error at Station/Auxiliary Consumption/Losses	2.898%		

Note: Generation-Load Summary for December 21, 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	402.41	242.71	235.30	140.20	7.41
2	Eastern Grid	153.03	62.85	61.02	109.68	1.83
	Total	555.44	305.56	296.32	249.88	9.24

Note: Generation-Load Summary for December 21, 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	449.19	300.29	292.22	140.66	8.07
2	Eastern Grid	155.05	54.48	51.70	108.81	2.78
	Total	604.24	354.77	343.92	249.47	10.85

NOTE- KHP, MHP & MAL 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:	December 22, 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	99.52	400kV THP - Siliguri Fdr- I	85.41	+	Unit-II & V under shutdown. Unit-III & IV on standby. 400kV THP-SIL Fdr II & IV under standby.
		Unit- II	0.00	400kV THP - Siliguri Fdr- II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	0.00	400kV THP - Malbase Fdr- III	150.60	+	
		Unit- V	0.00	400kV Malbase - Siliguri	58.00	+	
		Unit- VI	139.70	-	-	-	
		Total	239.22	Error at Station/Auxiliary Consumption/Losses	1.342%		
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Fdr - I	0.00		Unit-I on standby. Unit-II under shutdown. Unit-III under breakdown. 400kV MHP-JLG Fdr I & III on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Fdr - II	69.58	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	140.20	400kV MHP - Jigmeling Fdr - IV	69.90	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	140.20	Error at Station/Auxiliary Consumption/Losses	0.514%		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Fdr- I	15.56	+	Unit-I & II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Fdr- II	15.56	+	
		Unit- III	54.64	220kV CHP - Malbase Fdr- III	35.73	+	
		Unit- IV	53.30	220kV CHP - Semtokha Fdr- IV	24.80	+	
		-	-	220kV Malbase - Birpara Fdr.	-18.20	-	
		-	-	66kV CHP - Chumdo Fdr.	10.75	+	
		-	-	66kV CHP - Gedu Fdr.	3.14	+	
		-	-	3x3MVA, 66/11kV TFR	1.60	+	
		Total	107.94	Error at Station/Auxiliary Consumption/Losses	0.741%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	15.18	+	U/S Unit-I & L/S Unit-I under AMP.
		Unit- II	8.33	66kV BHP - Lobeysa Fdr.	12.41	+	
	Total	8.33	220kV BHP - Tsirang Fdr.	-2.59	-		
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.90	+	
Unit- II		17.11	30MVA ICT, 220/66kV				
		Total	17.11	Error at Station/Auxiliary Consumption/Losses	-1.808%		
5	126MW DHPC	Unit-I	0.00	220kV DHPC - Tsirang Fdr.	27.97	+	Unit-I on standby.
		Unit-II	28.19	220kV Jigmeling - Dagapela Fdr.	1.60	+	
		-	-	5MVA, 220/33kV TFR			
		Total	28.19	Error at Station/Auxiliary Consumption/Losses	0.780%		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	11.00	+	Unit-I under Annual Maintenance. Unit-II on standby.
		Unit-II	0.00	132kV KHP - Kilikhar Fdr- II	11.34	+	
		Unit- III	11.11	5MVA, 132/11kV TFR	0.00	+	
		Unit- IV	11.09	132kV Gelephu - Salakati Fdr.	-3.61	-	
		-	-	132kV Motanga - Rangia Fdr.	-3.81	-	
		-	-	220kV Tsirang - Jigmeling	23.08	+	
		Total	22.20	Error at Station/Auxiliary Consumption/Losses	-0.631%		

Note: Generation-Load summary for December 22, 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	400.79	221.38	219.21	156.33	2.17
2	Eastern Grid	162.40	53.42	52.84	132.06	0.58
	Total	563.19	274.80	272.05	288.39	2.75

Note: Generation-Load Summary for December 22, 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	337.26	276.12	270.54	52.4	5.58
2	Eastern Grid	150.26	46.05	42.83	112.95	3.22
	Total	487.52	322.17	313.37	165.35	8.80

NOTE: KHP, MAL 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.
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