

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	December 20, 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	90.33	400kV THP - Siliguri Fdr- I	76.00	+	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	148.96	+	
		Unit- V	0.00	400kV Malbase - Siliguri	56.00	+	
		Unit- VI	139.23	-	-	-	
		Total	229.56	Error at Station/Auxiliary Consumption/Losses	2.004%		
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	64.72	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	130.47	400kV MHP - Jigmeling Fdr - IV	64.97	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	130.47	Error at Station/Auxiliary Consumption/Losses	0.598%		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Fdr- I	-0.34	-	Unit I & II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Fdr- II	-0.27	-	
		Unit- III	51.90	220kV CHP - Malbase Fdr- III	32.53	+	
		Unit- IV	62.23	220kV CHP - Semtokha Fdr- IV	58.80	+	
		-	-	220kV Malbase - Birpara Fdr.	-26.00	-	
		-	-	66kV CHP - Chumdo Fdr.	16.65	+	
		-	-	66kV CHP - Gedu Fdr.	3.51	+	
		-	-	3x3MVA, 66/11kV TFR	2.20	+	
		Total	114.13	Error at Station/Auxiliary Consumption/Losses	0.920%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	9.13	+	U/S Unit-I & L/S Unit-I under AMP.
		Unit- II	8.23	66kV BHP - Lobeysa Fdr.	16.42	+	
		Total	8.23	220kV BHP - Tsirang Fdr.	-1.66	-	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	1.00	+	
		Unit- II	16.81	30MVA ICT, 220/66kV			
		Total	16.81	Error at Station/Auxiliary Consumption/Losses	0.599%		
5	126MW DHPC	Unit-I	0.00	220kV DHPC - Tsirang Fdr.	27.46	+	Unit-I on standby.
		Unit-II	27.69	220kV Jigmeling - Dagapela Fdr.	2.62	+	
		-	-	5MVA, 220/33kV TFR			
		Total	27.69	Error at Station/Auxiliary Consumption/Losses	0.831%		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	10.40	+	Unit-I under Annual Maintenance. Unit-II on standby.
		Unit-II	0.00	132kV KHP - Kilihar Fdr- II	13.81	+	
		Unit- III	12.48	5MVA, 132/11kV TFR	0.42	+	
		Unit- IV	12.50	132kV Gelephu - Salakati Fdr.	-22.00	-	
		-	-	132kV Motanga - Rangia Fdr.	1.16	+	
		-	-	220kV Tsirang - Jigmeling	22.64	+	
		Total	24.98	Error at Station/Auxiliary Consumption/Losses	1.417%		

Note: Generation-Load Summary for December 20, 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	396.42	268.39	264.98	105.39	3.41
2	Eastern Grid	155.45	69.24	68.11	108.85	1.13
	Total	551.87	337.63	333.09	214.24	4.54

Note: Generation-Load Summary for December 20, 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	446.48	304.01	295.72	130.29	8.29
2	Eastern Grid	150.09	67.49	63.37	94.78	4.12
	Total	596.57	371.50	359.09	225.07	12.41

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 21, 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	68.40	400kV THP - Siliguri Fdr- I	74.00	+	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	142.20	+	
		Unit- V	0.00	400kV Malbase - Siliguri	58.00	+	
		Unit- VI	140.50	-	-	-	
		Total	208.90	Error at Station/Auxiliary Consumption/Losses	-3.494%		
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	61.80	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	128.50	400kV MHP - Jigmeling Fdr - IV	63.90	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	128.50	Error at Station/Auxiliary Consumption/Losses	2.179%		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Fdr- I	10.40	+	Unit-I & II under Annual Maintenance.
		Unit- II	0.00	220kV CHP - Birpara Fdr- II	10.50	+	
		Unit- III	60.29	220kV CHP - Malbase Fdr- III	51.70	+	
		Unit- IV	62.10	220kV CHP - Semtokha Fdr- IV	31.20	+	
		-	-	220kV Malbase - Birpara Fdr.	-22.00	-	
		-	-	66kV CHP - Chumdo Fdr.	11.80	+	
		-	-	66kV CHP - Gedu Fdr.	2.70	+	
		-	-	3x3MVA, 66/11kV TFR	1.66	+	
		Total	122.39	Error at Station/Auxiliary Consumption/Losses	1.985%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	17.85	+	U/S Unit-I & L/S Unit-I under AMP.
		Unit- II	8.15	66kV BHP - Lobeysa Fdr.	13.55	+	
	Total	8.15	220kV BHP - Tsirang Fdr.	-7.13	-		
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.90	+	
Unit- II		16.86	30MVA ICT, 220/66kV				
		Total	16.86	Error at Station/Auxiliary Consumption/Losses	-0.640%		
5	126MW DHPC	Unit-I	0.00	220kV DHPC - Tsirang Fdr.	27.96	+	Unit-I on standby.
		Unit-II	28.21	220kV Jigmeling - Dagapela Fdr.	1.80	+	
		-	-	5MVA, 220/33kV TFR			
		Total	28.21	Error at Station/Auxiliary Consumption/Losses	0.886%		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	11.05	+	Unit-I under Annual Maintenance. Unit-II on standby.
		Unit-II	0.00	132kV KHP - Kilikhar Fdr- II	11.36	+	
		Unit- III	11.62	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	11.36	132kV Gelephu - Salakati Fdr.	-15.40	-	
		-	-	132kV Motanga - Rangia Fdr.	-1.83	-	
		-	-	220kV Tsirang - Jigmeling	18.70	+	
		Total	22.98	Error at Station/Auxiliary Consumption/Losses	1.088%		

Note: Generation-Load summary for December 21, 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	384.51	234.91	241.49	130.90	-6.58
2	Eastern Grid	151.48	61.71	58.66	108.47	3.05
	Total	535.99	296.62	300.15	239.37	-3.53

Note: Generation-Load Summary for December 21, 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	337.84	280.89	271.08	49.3	9.81
2	Eastern Grid	155.42	34.87	33.76	128.2	1.11
	Total	493.26	315.76	304.84	177.50	10.92

NOTE: KHP, MAL, CHP, THPs 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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