

**BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT**

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>November 8, 2020</b>
<b>Hours:</b>	<b>19:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
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	0.00	400kV THP - Siliguri Fdr- I	226.23	+	Unit-I under shutdown Unit- II & 400kV THP-SIL Fdr III on Standby. 400kV Tala-Malbase & ICT under shutdown.
		Unit- II	0.00	400kV THP - Siliguri Fdr- II	223.72	+	
		Unit- III	99.90	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	160.00	400kV THP - Malbase Fdr- III	0.00		
		Unit- V	99.60	400kV Malbase - Siliguri	0.00		
		Unit- VI	100.60	-	-	-	
		<b>Total</b>	<b>460.10</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>2.206%</b>		
2	720MW MHP	Unit-I	75.26	400kV MHP - Jigmeling Fdr - I	0.00		Unit-II on Standby. Unit-III under AMP(22/09/20- 30/11/2020). 400kV MHP-Jigmeling Fdr I under shutdown. 400kV MHP-Jigmeling Fdr II under Breakdown.
		Unit-II	0.00	400kV MHP - Jigmeling Fdr - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	102.55	+	
		Unit-IV	130.52	400kV MHP - Jigmeling Fdr - IV	101.89	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>205.78</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.651%</b>		
3	336MW CHP	Unit- I	74.00	220kV CHP - Birpara Fdr- I	40.77	+	Unit II under Annual Maintenance
		Unit- II	0.00	220kV CHP - Birpara Fdr- II	40.36	+	
		Unit- III	73.30	220kV CHP - Malbase Fdr- III	96.98	+	
		Unit- IV	73.90	220kV CHP - Semtokha Fdr- IV	25.89	+	
		-	-	220kV Malbase - Birpara Fdr.	-9.00	-	
		-	-	66kV CHP - Chumdo Fdr.	11.75	+	
		-	-	66kV CHP - Gedu Fdr.	3.51	+	
		-	-	3x3MVA, 66/11kV TFR	1.49	+	
		<b>Total</b>	<b>221.20</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.203%</b>		
4	24MW BHP (U/S)	Unit- I	6.72	220kV BHP - Semtokha Fdr.	24.16	+	
		Unit- II	6.72	66kV BHP - Lobeysa Fdr.	14.94	+	
		<b>Total</b>	<b>13.44</b>	220kV BHP - Tsirang Fdr.	1.42	+	
	40MW BHP (L/S)	Unit- I	14.07	5MVA, 66/11kV TFR	0.64	+	
		Unit- II	13.94	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>28.01</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.700%</b>		
5	126MW DHPC	Unit-I	47.44	220kV DHPC - Tsirang Fdr.	47.20	+	Unit II on Standby
		Unit-II	0.00	220kV Jigmeling - Dagapela Fdr.	1.90	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>47.44</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.506%</b>		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	22.43	+	Unit I under Annual Maintenance
		Unit-II	14.00	132kV KHP - Kilikhar Fdr- II	18.55	+	
		Unit- III	14.00	5MVA, 132/11kV TFR	0.29	+	
		Unit- IV	14.00	132kV Gelephu - Salakati Fdr.	4.46	+	
		-	-	132kV Motanga - Rangia Fdr.	23.06	+	
		-	-	220kV Tsirang - Jigmeling	46.27	+	
		<b>Total</b>	<b>42.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.741%</b>		

**Note: Generation-Load Summary for November 08, 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	770.19	201.84	192.61	522.08	9.23
2	Eastern Grid	247.78	62.09	60.02	231.96	2.07
	<b>Total</b>	<b>1,017.97</b>	<b>263.93</b>	<b>252.63</b>	<b>754.04</b>	<b>11.30</b>

**Note: Generation-Load Summary for November 08, 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	737.42	279.57	272.65	418.62	6.92
2	Eastern Grid	246.16	68.85	67.35	216.54	1.50
	<b>Total</b>	<b>983.58</b>	<b>348.42</b>	<b>340.00</b>	<b>635.16</b>	<b>8.42</b>

**NOTE: MHP, MAL, KHP & Motanga 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:	November 9, 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	0.00	400kV THP - Siliguri Fdr- I	168.56	+	Unit-I under shutdown Unit- II & 400kV THP-SIL Fdr III under Standby. 400kV Tala-Malbase & ICT under shutdown.
		Unit- II	0.00	400kV THP - Siliguri Fdr- II	165.24	+	
		Unit- III	80.16	400kV THP - Siliguri Fdr- IV	0.00		
		Unit- IV	81.54	400kV THP - Malbase Fdr- III	0.00		
		Unit- V	79.87	400kV Malbase - Siliguri	0.00		
		Unit- VI	101.15	-	-	-	
		<b>Total</b>	<b>342.72</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>2.603%</b>		
2	720MW MHP	Unit-I	80.15	400kV MHP - Jigmeling Fdr - I	0.00		Unit-III under maintenance (22/09/20-30/11/2020). Unit-II under standby. 400kV MHP-JLG Fdr II under Breakdown. 400kV MHP-JLG Fdr I under shutdown
		Unit-II	0.00	400kV MHP - Jigmeling Fdr - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	105.18	+	
		Unit-IV	130.37	400kV MHP - Jigmeling Fdr - IV	104.15	+	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>210.52</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.565%</b>		
3	336MW CHP	Unit- I	61.61	220kV CHP - Birpara Fdr- I	40.99	+	Unit II under Annual Maintenance
		Unit- II	0.00	220kV CHP - Birpara Fdr- II	40.59	+	
		Unit- III	60.34	220kV CHP - Malbase Fdr- III	87.94	+	
		Unit- IV	60.09	220kV CHP - Semtokha Fdr- IV	0.96	-	
		-	-	220kV Malbase - Birpara Fdr.	-12.00	-	
		-	-	66kV CHP - Chumdo Fdr.	8.94	+	
		-	-	66kV CHP - Gedu Fdr.	2.95	+	
		-	-	3x3MVA, 66/11kV TFR	1.08	+	
		<b>Total</b>	<b>182.04</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-0.775%</b>		
4	24MW BHP (U/S)	Unit- I	6.65	220kV BHP - Semtokha Fdr.	41.31	+	
		Unit- II	6.65	66kV BHP - Lobeysa Fdr.	13.60	+	
		<b>Total</b>	<b>13.30</b>	220kV BHP - Tsirang Fdr.	-14.50	-	
	40MW BHP (L/S)	Unit- I	13.95	5MVA, 66/11kV TFR	0.50	+	
		Unit- II	13.67	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>27.62</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.036%</b>		
5	126MW DHPC	Unit-I	46.70	220kV DHPC - Tsirang Fdr.	46.47	+	Unit-II Standby
		Unit-II	0.00	220kV Jigmeling - Dagapela Fdr.	1.10	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>46.70</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.493%</b>		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	26.78	+	Unit I Annual Maintenance.132kV Motanga- Rangia under emergency shutdown from India end.
		Unit-II	13.00	132kV KHP - Kilikhar Fdr- II	11.53	+	
		Unit- III	13.00	5MVA, 132/11kV TFR	0.06	+	
		Unit- IV	13.00	132kV Gelephu - Salakati Fdr.	14.87	+	
		-	-	132kV Motanga - Rangia Fdr.	0.03	+	
		-	-	220kV Tsirang - Jigmeling	30.72	+	
		<b>Total</b>	<b>39.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.615%</b>		

Note: Generation-Load summary for November 09, 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	612.38	178.28	171.63	403.38	6.65
2	Eastern Grid	249.52	56.01	54.19	224.23	1.82
	<b>Total</b>	<b>861.90</b>	<b>234.29</b>	<b>225.82</b>	<b>627.61</b>	<b>8.47</b>

Note: Generation-Load Summary for November 09, 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	571.54	269.63	255.96	269.22	13.67
2	Eastern Grid	254.44	65.77	58.90	221.36	6.87
	<b>Total</b>	<b>825.98</b>	<b>335.40</b>	<b>314.86</b>	<b>490.58</b>	<b>20.54</b>

NOTES: KHP,MHP,MAL & Motanga 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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