

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

Maximum Load/Demand till Date

Date:	August 15, 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	187.99	400kV THP - Siliguri Fdr- I	280.48	+	
		Unit- II	187.49	400kV THP - Siliguri Fdr- II	277.98	+	
		Unit- III	187.98	400kV THP - Siliguri Fdr- IV	271.12	+	
		Unit- IV	187.03	400kV THP - Malbase Fdr- III	274.95	+	
		Unit- V	187.64	400kV Malbase - Siliguri	263.38	+	
		Unit- VI	187.17	-	-	-	
		<b>Total</b>	<b>1,125.30</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.846%</b>		
2	720MW MHP	Unit-I	197.38	400kV MHP - Jigmeling Fdr - I	261.00	+	400kV MHP-JLG IV Standby
		Unit-II	190.27	400kV MHP - Jigmeling Fdr - II	242.80	+	
		Unit-III	196.94	400kV MHP - Jigmeling Fdr - III	271.90	+	
		Unit-IV	190.91	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>775.50</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-0.026%</b>		
3	336MW CHP	Unit- I	91.64	220kV CHP - Birpara Fdr- I	127.93	+	
		Unit- II	90.88	220kV CHP - Birpara Fdr- II	127.39	+	
		Unit- III	91.39	220kV CHP - Malbase Fdr- III	178.82	+	
		Unit- IV	91.79	220kV CHP - Semtokha Fdr- IV	-77.94	-	
		-	-	220kV Malbase - Birpara Fdr.	74.22	+	
		-	-	66kV CHP - Chumdo Fdr.	0.81	+	
		-	-	66kV CHP - Gedu Fdr.	6.27	+	
		-	-	3x3MVA, 66/11kV TFR	0.85	+	
		<b>Total</b>	<b>365.70</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.429%</b>		
4	24MW BHP (U/S)	Unit- I	11.79	220kV BHP - Semtokha Fdr.	94.55	+	
		Unit- II	11.79	66kV BHP - Lobeysa Fdr.	15.33	+	
		<b>Total</b>	<b>23.58</b>	220kV BHP - Tsirang Fdr.	-44.37	-	
	40MW BHP (L/S)	Unit- I	20.94	5MVA, 66/11kV TFR	0.44	+	
		Unit- II	20.15	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.09</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-1.979%</b>		
5	126MW DHPC	Unit-I	63.49	220kV DHPC - Tsirang Fdr.	126.47	+	
		Unit-II	63.56	220kV Jigmeling - Dagapela Fdr.	1.70	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>127.05</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.457%</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	40.17	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	24.59	+	
		Unit- III	16.31	5MVA, 132/11kV TFR	0.30	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	61.24	+	
		-	-	132kV Motanga - Rangia Fdr.	31.52	+	
		-	-	220kV Tsirang - Jigmeling	86.42	+	
		<b>Total</b>	<b>65.81</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.140%</b>		

**Note: Generation-Load Summary for August 15, 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	1,682.72	173.80	153.86	1,422.50	19.94
2	Eastern Grid	841.31	59.27	58.72	868.46	0.55
	<b>Total</b>	<b>2,524.03</b>	<b>233.07</b>	<b>212.58</b>	<b>2,290.96</b>	<b>20.49</b>

**Note: Generation-Load Summary for August 15, 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	1,656.27	245.31	223.51	1319.98	21.80
2	Eastern Grid	430.07	65.36	63.67	455.69	1.69
	<b>Total</b>	<b>2,086.34</b>	<b>310.67</b>	<b>287.18</b>	<b>1,775.67</b>	<b>23.49</b>

**NOTE: KHP loads 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**

<b>Date:</b>	<b>August 16, 2020</b>
<b>Hours:</b>	<b>09:00 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	186.85	400kV THP - Siliguri Fdr- I	279.12	+	
		Unit- II	186.91	400kV THP - Siliguri Fdr- II	276.81	+	
		Unit- III	187.09	400kV THP - Siliguri Fdr- IV	269.07	+	
		Unit- IV	186.60	400kV THP - Malbase Fdr- III	279.17	+	
		Unit- V	187.82	400kV Malbase - Siliguri	260.93	+	
		Unit- VI	186.43	-	-	-	
		<b>Total</b>	<b>1,121.70</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.563%</b>		
2	720MW MHP	Unit-I	197.56	400kV MHP - Jigmeling Fdr - I	261.00	+	400kV MHP-JLG IV Standby.
		Unit-II	190.10	400kV MHP - Jigmeling Fdr - II	242.70	+	
		Unit-III	197.23	400kV MHP - Jigmeling Fdr - III	272.00	+	
		Unit-IV	190.84	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>775.73</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.004%</b>		
3	336MW CHP	Unit- I	91.05	220kV CHP - Birpara Fdr- I	126.01	+	
		Unit- II	91.31	220kV CHP - Birpara Fdr- II	126.16	+	
		Unit- III	91.61	220kV CHP - Malbase Fdr- III	183.38	+	
		Unit- IV	91.83	220kV CHP - Semtokha Fdr- IV	-77.75	-	
		-	-	220kV Malbase - Birpara Fdr.	66.79	+	
		-	-	66kV CHP - Chumdo Fdr.	0.83	+	
		-	-	66kV CHP - Gedu Fdr.	6.27	+	
		-	-	3x3MVA, 66/11kV TFR	0.86	+	
		<b>Total</b>	<b>365.80</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.011%</b>		
4	24MW BHP (U/S)	Unit- I	11.80	220kV BHP - Semtokha Fdr.	96.16	+	
		Unit- II	11.80	66kV BHP - Lobeysa Fdr.	15.27	+	
		<b>Total</b>	<b>23.60</b>	220kV BHP - Tsirang Fdr.	-46.04	-	
	40MW BHP (L/S)	Unit- I	20.95	5MVA, 66/11kV TFR	0.44	+	
		Unit- II	20.14	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.09</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-2.774%</b>		
5	126MW DHPC	Unit-I	63.50	220kV DHPC - Tsirang Fdr.	126.50	+	
		Unit-II	63.57	220kV Jigmeling - Dagapela Fdr.	1.00	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>127.07</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.449%</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	42.23	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	21.97	+	
		Unit- III	16.05	5MVA, 132/11kV TFR	0.28	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	59.39	+	
		-	-	132kV Motanga - Rangia Fdr.	40.29	+	
		-	-	220kV Tsirang - Jigmeling	77.22	+	
		<b>Total</b>	<b>65.55</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.628%</b>		

**Note: Generation-Load summary for August 16, 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	1,679.26	197.15	181.15	1,404.89	16.00
2	Eastern Grid	841.28	43.12	42.02	875.38	1.10
	<b>Total</b>	<b>2,520.54</b>	<b>240.27</b>	<b>223.17</b>	<b>2,280.27</b>	<b>17.10</b>

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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	1661.32	233.18	215.51	1,341.64	17.67
2	Eastern Grid	445.74	51.54	48.80	480.70	2.74
	<b>Total</b>	<b>2,107.06</b>	<b>284.72</b>	<b>264.31</b>	<b>1,822.34</b>	<b>20.41</b>

**NOTES: KHP 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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