

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>July 25, 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	187.26	400kV THP - Siliguri Fdr- I	271.52	+	
		Unit- II	187.18	400kV THP - Siliguri Fdr- II	269.07	+	
		Unit- III	187.61	400kV THP - Siliguri Fdr- IV	262.61	+	
		Unit- IV	186.08	400kV THP - Malbase Fdr- III	299.52	+	
		Unit- V	187.37	400kV Malbase - Siliguri	248.18	+	
		Unit- VI	186.96	-	-	-	
		<b>Total</b>	<b>1,122.46</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.759%</b>		
2	720MW MHP	Unit-I	197.71	400kV MHP - Jigmeling Fdr - I	198.69	+	400kV MHP-JLG IV Standby. Unit-IV under maintenance
		Unit-II	197.80	400kV MHP - Jigmeling Fdr - II	199.29	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	194.10	+	
		Unit-IV	198.46	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>593.97</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.318%</b>		
3	336MW CHP	Unit- I	91.47	220kV CHP - Birpara Fdr- I	121.06	+	
		Unit- II	90.97	220kV CHP - Birpara Fdr- II	120.51	+	
		Unit- III	91.29	220kV CHP - Malbase Fdr- III	166.41	+	
		Unit- IV	91.09	220kV CHP - Semtokha Fdr- IV	-55.21	-	
		-	-	220kV Malbase - Birpara Fdr.	71.08	+	
		-	-	66kV CHP - Chumdo Fdr.	3.17	+	
		-	-	66kV CHP - Gedu Fdr.	7.73	+	
		-	-	3x3MVA, 66/11kV TFR	1.18	+	
		<b>Total</b>	<b>364.82</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-0.008%</b>		
4	24MW BHP (U/S)	Unit- I	11.83	220kV BHP - Semtokha Fdr.	79.70	+	
		Unit- II	11.83	66kV BHP - Lobeysa Fdr.	17.19	+	
		<b>Total</b>	<b>23.66</b>	220kV BHP - Tsirang Fdr.	-31.70	-	
	40MW BHP (L/S)	Unit- I	21.04	5MVA, 66/11kV TFR	0.61	+	
		Unit- II	20.15	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.19</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-1.465%</b>		
5	126MW DHPC	Unit-I	63.44	220kV DHPC - Tsirang Fdr.	126.31	+	
		Unit-II	63.34	220kV Jigmeling - Dagapela Fdr.	1.40	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>126.78</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.371%</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	37.74	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	26.83	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.37	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	49.12	+	
		-	-	132kV Motanga - Rangia Fdr.	55.27	+	
		-	-	220kV Tsirang - Jigmeling	92.30	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.606%</b>		

**Note: Generation-Load Summary for July 25, 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	1,678.91	222.58	204.75	1,364.03	17.83
2	Eastern Grid	659.97	55.80	52.85	696.47	2.95
	<b>Total</b>	<b>2,338.88</b>	<b>278.38</b>	<b>257.60</b>	<b>2,060.50</b>	<b>20.78</b>

**Note: Generation-Load Summary for July 25, 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	1,680.08	231.98	213.56	1,346.10	18.42
2	Eastern Grid	396.00	55.60	54.80	442.40	0.80
	<b>Total</b>	<b>2,076.08</b>	<b>287.58</b>	<b>268.36</b>	<b>1,788.50</b>	<b>19.22</b>

**NOTE: KHP & MHP 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

Date:	July 26, 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	185.37	400kV THP - Siliguri Fdr- I	276.62	+	
		Unit- II	187.10	400kV THP - Siliguri Fdr- II	273.97	+	
		Unit- III	187.50	400kV THP - Siliguri Fdr- IV	267.12	+	
		Unit- IV	186.72	400kV THP - Malbase Fdr- III	283.97	+	
		Unit- V	187.42	400kV Malbase - Siliguri	258.21	+	
		Unit- VI	186.35	-	-	-	
		<b>Total</b>	<b>1,120.46</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.676%</b>		
2	720MW MHP	Unit-I	197.46	400kV MHP - Jigmeling Fdr - I	200.30	+	Unit III under emergency shutdown. 400kV MHP-JLG IV Standby.
		Unit-II	197.98	400kV MHP - Jigmeling Fdr - II	180.20	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	213.20	+	
		Unit-IV	198.22	400kV MHP - Jigmeling Fdr - IV			
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>593.66</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-0.007%</b>		
3	336MW CHP	Unit- I	91.62	220kV CHP - Birpara Fdr- I	123.72	+	
		Unit- II	91.12	220kV CHP - Birpara Fdr- II	123.40	+	
		Unit- III	91.51	220kV CHP - Malbase Fdr- III	182.21	+	
		Unit- IV	92.00	220kV CHP - Semtokha Fdr- IV	-74.61	-	
		-	-	220kV Malbase - Birpara Fdr.	63.13	+	
		-	-	66kV CHP - Chumdo Fdr.	1.08	+	
		-	-	66kV CHP - Gedu Fdr.	7.37	+	
		-	-	3x3MVA, 66/11kV TFR	0.89	+	
		<b>Total</b>	<b>366.25</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.598%</b>		
4	24MW BHP (U/S)	Unit- I	11.83	220kV BHP - Semtokha Fdr.	92.50	+	
		Unit- II	11.83	66kV BHP - Lobeysa Fdr.	15.94	+	
		<b>Total</b>	<b>23.66</b>	220kV BHP - Tsirang Fdr.	-43.12	-	
	40MW BHP (L/S)	Unit- I	21.01	5MVA, 66/11kV TFR	0.42	+	
		Unit- II	20.18	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.19</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-2.161%</b>		
5	126MW DHPC	Unit-I	63.49	220kV DHPC - Tsirang Fdr.	126.29	+	
		Unit-II	63.39	220kV Jigmeling - Dagapela Fdr.	1.33	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>126.88</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.465%</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	40.11	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	24.49	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.10	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	50.29	+	
		-	-	132kV Motanga - Rangia Fdr.	56.05	+	
		-	-	220kV Tsirang - Jigmeling	78.07	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.967%</b>		

Note: Generation-Load summary for July 26, 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	1,678.44	214.20	194.86	1,386.17	19.34
2	Eastern Grid	659.66	37.69	36.43	700.04	1.26
	<b>Total</b>	<b>2,338.10</b>	<b>251.89</b>	<b>231.29</b>	<b>2,086.21</b>	<b>20.60</b>

Note: Generation-Load Summary for July 26, 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	1680.79	264.72	245.99	1,333.62	18.73
2	Eastern Grid	436.85	53.63	51.25	465.67	2.38
	<b>Total</b>	<b>2,117.64</b>	<b>318.35</b>	<b>297.24</b>	<b>1,799.29</b>	<b>21.11</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.
  - The clocks of all the locations are not synchronized.
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