

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

Maximum Load/Demand till Date

Date:	August 17, 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	187.40	400kV THP - Siliguri Fdr- I	269.96	+	
		Unit- II	188.04	400kV THP - Siliguri Fdr- II	268.22	+	
		Unit- III	187.32	400kV THP - Siliguri Fdr- IV	261.01	+	
		Unit- IV	186.49	400kV THP - Malbase Fdr- III	304.14	+	
		Unit- V	186.38	400kV Malbase - Siliguri	245.71	+	
		Unit- VI	185.83	-	-	-	
		<b>Total</b>	<b>1,121.46</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.617%</b>		
2	720MW MHP	Unit-I	197.82	400kV MHP - Jigmeling Fdr - I	259.51	+	400kV MHP-JLG IV Standby
		Unit-II	196.66	400kV MHP - Jigmeling Fdr - II	260.53	+	
		Unit-III	191.66	400kV MHP - Jigmeling Fdr - III	253.30	+	
		Unit-IV	190.09	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>776.23</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.372%</b>		
3	336MW CHP	Unit- I	91.78	220kV CHP - Birpara Fdr- I	121.10	+	
		Unit- II	91.02	220kV CHP - Birpara Fdr- II	121.52	+	
		Unit- III	91.72	220kV CHP - Malbase Fdr- III	152.05	+	
		Unit- IV	91.73	220kV CHP - Semtokha Fdr- IV	-43.41	-	
		-	-	220kV Malbase - Birpara Fdr.	84.47	+	
		-	-	66kV CHP - Chumdo Fdr.	4.98	+	
		-	-	66kV CHP - Gedu Fdr.	5.98	+	
		-	-	3x3MVA, 66/11kV TFR	1.27	+	
		<b>Total</b>	<b>366.25</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.754%</b>		
4	24MW BHP (U/S)	Unit- I	11.81	220kV BHP - Semtokha Fdr.	69.79	+	
		Unit- II	11.81	66kV BHP - Lobeysa Fdr.	16.83	+	
		<b>Total</b>	<b>23.62</b>	220kV BHP - Tsirang Fdr.	-21.59	-	
	40MW BHP (L/S)	Unit- I	20.98	5MVA, 66/11kV TFR	0.67	+	
		Unit- II	20.16	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.14</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-1.452%</b>		
5	126MW DHPC	Unit-I	63.47	220kV DHPC - Tsirang Fdr.	126.45	+	
		Unit-II	63.69	220kV Jigmeling - Dagapela Fdr.	1.90	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>127.16</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.558%</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	36.87	+	
		Unit-II	16.50	132kV KHP - Kilihar Fdr- II	28.18	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.26	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	46.72	+	
		-	-	132kV Motanga - Rangia Fdr.	59.01	+	
		-	-	220kV Tsirang - Jigmeling	99.45	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.045%</b>		

**Note: Generation-Load Summary for August 17, 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	1,679.63	208.19	189.43	1,371.99	18.76
2	Eastern Grid	842.23	62.61	59.03	879.07	3.58
	<b>Total</b>	<b>2,521.86</b>	<b>270.80</b>	<b>248.46</b>	<b>2,251.06</b>	<b>22.34</b>

**Note: Generation-Load Summary for August 17, 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	1,658.72	242.15	228.22	1325.72	13.93
2	Eastern Grid	614.04	64.27	60.02	640.62	4.25
	<b>Total</b>	<b>2,272.76</b>	<b>306.42</b>	<b>288.24</b>	<b>1,966.34</b>	<b>18.18</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 18, 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	187.60	400kV THP - Siliguri Fdr- I	273.77	+	
		Unit- II	188.28	400kV THP - Siliguri Fdr- II	270.41	+	
		Unit- III	187.41	400kV THP - Siliguri Fdr- IV	262.46	+	
		Unit- IV	187.24	400kV THP - Malbase Fdr- III	298.85	+	
		Unit- V	188.12	400kV Malbase - Siliguri	250.22	+	
		Unit- VI	187.02	-	-	-	
		<b>Total</b>	<b>1,125.67</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.793%</b>		
2	720MW MHP	Unit-I	197.63	400kV MHP - Jigmeling Fdr - I	260.90	+	400kV MHP-JLG IV Standby.
		Unit-II	196.77	400kV MHP - Jigmeling Fdr - II	242.50	+	
		Unit-III	190.25	400kV MHP - Jigmeling Fdr - III	271.70	+	
		Unit-IV	190.56	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>775.21</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.014%</b>		
3	336MW CHP	Unit- I	91.73	220kV CHP - Birpara Fdr- I	102.37	+	Unit-IV under shutdown
		Unit- II	93.55	220kV CHP - Birpara Fdr- II	102.23	+	
		Unit- III	91.63	220kV CHP - Malbase Fdr- III	146.72	+	
		Unit- IV	0.00	220kV CHP - Semtokha Fdr- IV	-81.75	-	
		-	-	220kV Malbase - Birpara Fdr.	56.88	+	
		-	-	66kV CHP - Chumdo Fdr.	0.84	+	
		-	-	66kV CHP - Gedu Fdr.	5.42	+	
		<b>Total</b>	<b>276.91</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.079%</b>		
4	24MW BHP (U/S)	Unit- I	11.79	220kV BHP - Semtokha Fdr.	99.40	+	
		Unit- II	11.79	66kV BHP - Lobeysa Fdr.	15.42	+	
		<b>Total</b>	<b>23.58</b>	220kV BHP - Tsirang Fdr.	-49.41	-	
	40MW BHP (L/S)	Unit- I	21.04	5MVA, 66/11kV TFR	0.41	+	
		Unit- II	20.18	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.22</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-2.475%</b>		
5	126MW DHPC	Unit-I	63.51	220kV DHPC - Tsirang Fdr.	126.50	+	
		Unit-II	63.54	220kV Jigmeling - Dagapela Fdr.	1.10	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>127.05</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.433%</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	42.37	+	
		Unit-II	16.50	132kV KHP - Kilihar Fdr- II	22.20	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.09	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	54.90	+	
		-	-	132kV Motanga - Rangia Fdr.	40.51	+	
		-	-	220kV Tsirang - Jigmeling	75.14	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>2.030%</b>		

**Note: Generation-Load summary for August 18, 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	1,594.43	200.95	182.12	1,318.34	18.83
2	Eastern Grid	841.21	45.84	44.39	870.51	1.45
	<b>Total</b>	<b>2,435.64</b>	<b>246.79</b>	<b>226.51</b>	<b>2,188.85</b>	<b>20.28</b>

**Note: Generation-Load Summary for August 18, 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	1648.44	223.20	207.34	1,335.13	15.86
2	Eastern Grid	614.83	48.38	48.45	656.56	-0.07
	<b>Total</b>	<b>2,263.27</b>	<b>271.58</b>	<b>255.79</b>	<b>1,991.69</b>	<b>15.79</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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