

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>August 1, 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	188.37	400kV THP - Siliguri Fdr- I	269.05	+	
		Unit- II	187.11	400kV THP - Siliguri Fdr- II	266.85	+	
		Unit- III	187.15	400kV THP - Siliguri Fdr- IV	259.29	+	
		Unit- IV	185.04	400kV THP - Malbase Fdr- III	307.21	+	
		Unit- V	186.88	400kV Malbase - Siliguri	242.70	+	
		Unit- VI	186.24	-	-	-	
		<b>Total</b>	<b>1,120.79</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.641%</b>		
2	720MW MHP	Unit-I	197.67	400kV MHP - Jigmeling Fdr - I	197.67	+	400kV MHP-JLG IV Standby. Unit-III under shutdown till 4th August,2020.
		Unit-II	197.90	400kV MHP - Jigmeling Fdr - II	198.82	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	193.53	+	
		Unit-IV	198.22	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>593.79</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.635%</b>		
3	336MW CHP	Unit- I	91.61	220kV CHP - Birpara Fdr- I	119.37	+	
		Unit- II	91.16	220kV CHP - Birpara Fdr- II	119.62	+	
		Unit- III	91.66	220kV CHP - Malbase Fdr- III	158.78	+	
		Unit- IV	91.80	220kV CHP - Semtokha Fdr- IV	-45.54	-	
		-	-	220kV Malbase - Birpara Fdr.	75.82	+	
		-	-	66kV CHP - Chumdo Fdr.	3.45	+	
		-	-	66kV CHP - Gedu Fdr.	7.75	+	
		-	-	3x3MVA, 66/11kV TFR	1.25	+	
		<b>Total</b>	<b>366.23</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.423%</b>		
4	24MW BHP (U/S)	Unit- I	11.86	220kV BHP - Semtokha Fdr.	69.71	+	
		Unit- II	11.86	66kV BHP - Lobeysa Fdr.	17.00	+	
		<b>Total</b>	<b>23.72</b>	220kV BHP - Tsirang Fdr.	-21.60	-	
	40MW BHP (L/S)	Unit- I	21.08	5MVA, 66/11kV TFR	0.64	+	
		Unit- II	20.20	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.28</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-1.154%</b>		
5	126MW DHPC	Unit-I	63.49	220kV DHPC - Tsirang Fdr.	126.33	+	
		Unit-II	63.41	220kV Jigmeling - Dagapela Fdr.	1.66	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>126.90</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	36.50	+	
		Unit-II	16.50	132kV KHP - Kilihar Fdr- II	28.16	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	51.20	+	
		-	-	132kV Motanga - Rangia Fdr.	60.65	+	
		-	-	220kV Tsirang - Jigmeling	102.00	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.424%</b>		

**Note: Generation-Load Summary for August 01, 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	1,678.92	224.22	206.12	1,352.70	18.10
2	Eastern Grid	659.79	59.92	55.21	701.87	4.71
	<b>Total</b>	<b>2,338.71</b>	<b>284.14</b>	<b>261.33</b>	<b>2,054.57</b>	<b>22.81</b>

**Note: Generation-Load Summary for August 01, 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	1681.23	255.32	239.13	1,334.83	16.19
2	Eastern Grid	438.06	44.97	43.93	484.17	1.04
	<b>Total</b>	<b>2,119.29</b>	<b>300.29</b>	<b>283.06</b>	<b>1,819.00</b>	<b>17.23</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 2, 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	188.06	400kV THP - Siliguri Fdr- I	274.93	+	
		Unit- II	186.98	400kV THP - Siliguri Fdr- II	272.93	+	
		Unit- III	187.09	400kV THP - Siliguri Fdr- IV	266.38	+	
		Unit- IV	186.14	400kV THP - Malbase Fdr- III	290.28	+	
		Unit- V	187.16	400kV Malbase - Siliguri	253.49	+	
		Unit- VI	185.84	-	-	-	
		<b>Total</b>	<b>1,121.27</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.494%</b>		
2	720MW MHP	Unit-I	197.37	400kV MHP - Jigmeling Fdr - I	263.30	+	400kV MHP-JLG IV Standby.
		Unit-II	197.85	400kV MHP - Jigmeling Fdr - II	245.00	+	
		Unit-III	189.38	400kV MHP - Jigmeling Fdr - III	274.50	+	
		Unit-IV	198.49	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>783.09</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.037%</b>		
3	336MW CHP	Unit- I	91.54	220kV CHP - Birpara Fdr- I	122.47	+	
		Unit- II	91.15	220kV CHP - Birpara Fdr- II	122.45	+	
		Unit- III	91.57	220kV CHP - Malbase Fdr- III	177.21	+	
		Unit- IV	91.46	220kV CHP - Semtokha Fdr- IV	-67.37	-	
		-	-	220kV Malbase - Birpara Fdr.	66.08	+	
		-	-	66kV CHP - Chumdo Fdr.	1.07	+	
		-	-	66kV CHP - Gedu Fdr.	7.38	+	
		-	-	3x3MVA, 66/11kV TFR	0.87	+	
		<b>Total</b>	<b>365.72</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.448%</b>		
4	24MW BHP (U/S)	Unit- I	11.81	220kV BHP - Semtokha Fdr.	88.96	+	
		Unit- II	11.81	66kV BHP - Lobeysa Fdr.	16.31	+	
		<b>Total</b>	<b>23.62</b>	220kV BHP - Tsirang Fdr.	-39.92	-	
	40MW BHP (L/S)	Unit- I	21.00	5MVA, 66/11kV TFR	0.49	+	
		Unit- II	20.15	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.15</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-2.600%</b>		
5	126MW DHPC	Unit-I	63.52	220kV DHPC - Tsirang Fdr.	126.39	+	
		Unit-II	63.45	220kV Jigmeling - Dagapela Fdr.	0.90	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>126.97</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	40.27	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	24.44	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.11	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	51.44	+	
		-	-	132kV Motanga - Rangia Fdr.	56.08	+	
		-	-	220kV Tsirang - Jigmeling	87.35	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.788%</b>		

**Note: Generation-Load summary for August 02, 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	1,678.73	212.65	195.65	1,378.73	17.00
2	Eastern Grid	849.09	46.12	44.65	890.32	1.47
	<b>Total</b>	<b>2,527.82</b>	<b>258.77</b>	<b>240.30</b>	<b>2,269.05</b>	<b>18.47</b>

**Note: Generation-Load Summary for August 02, 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	1681.23	255.32	239.13	1,334.83	16.19
2	Eastern Grid	438.06	44.97	43.93	484.17	1.04
	<b>Total</b>	<b>2,119.29</b>	<b>300.29</b>	<b>283.06</b>	<b>1,819.00</b>	<b>17.23</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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