

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

Maximum Load/Demand till Date

Date:	August 7, 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	187.83	400kV THP - Siliguri Fdr- I	262.72	+	
		Unit- II	186.90	400kV THP - Siliguri Fdr- II	260.04	-	
		Unit- III	186.85	400kV THP - Siliguri Fdr- IV	253.96	+	
		Unit- IV	185.68	400kV THP - Malbase Fdr- III	327.38	+	
		Unit- V	186.89	400kV Malbase - Siliguri	233.04	+	
		Unit- VI	186.18	-	-	-	
		<b>Total</b>	<b>1,120.33</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.449%</b>		
2	720MW MHP	Unit-I	197.05	400kV MHP - Jigmeling Fdr - I	260.00	+	400kV MHP-JLG IV Standby.
		Unit-II	196.05	400kV MHP - Jigmeling Fdr - II	242.10	+	
		Unit-III	190.10	400kV MHP - Jigmeling Fdr - III	271.60	+	
		Unit-IV	190.91	400kV MHP - Jigmeling Fdr - IV	0.00	-	
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>774.11</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.053%</b>		
3	336MW CHP	Unit- I	91.59	220kV CHP - Birpara Fdr- I	110.96	+	
		Unit- II	91.03	220kV CHP - Birpara Fdr- II	111.03	+	
		Unit- III	91.50	220kV CHP - Malbase Fdr- III	130.96	+	
		Unit- IV	91.35	220kV CHP - Semtokha Fdr- IV	-1.95	-	
		-	-	220kV Malbase - Birpara Fdr.	82.69	+	
		-	-	66kV CHP - Chumdo Fdr.	5.65	+	
		-	-	66kV CHP - Gedu Fdr.	6.63	+	
		-	-	3x3MVA, 66/11kV TFR	1.20	+	
		<b>Total</b>	<b>365.47</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.271%</b>		
4	24MW BHP (U/S)	Unit- I	11.81	220kV BHP - Semtokha Fdr.	28.27	+	
		Unit- II	11.81	66kV BHP - Lobeysa Fdr.	16.01	+	
		<b>Total</b>	<b>23.62</b>	220kV BHP - Tsirang Fdr.	19.77	+	
	40MW BHP (L/S)	Unit- I	21.00	5MVA, 66/11kV TFR	0.67	+	
		Unit- II	20.14	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.14</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.062%</b>		
5	126MW DHPC	Unit-I	0.00	220kV DHPC - Tsirang Fdr.	63.19	+	Unit I tripped at 18:02hrs(07.08.2020)
		Unit-II	63.45	220kV Jigmeling - Dagapela Fdr.	1.70	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>63.45</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.410%</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	37.97	+	
		Unit-II	16.50	132kV KHP - Kilihar Fdr- II	26.84	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.25	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	30.76	+	
		-	-	132kV Motanga - Rangia Fdr.	50.26	+	
		-	-	220kV Tsirang - Jigmeling	78.85	+	
		<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 07, 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	1,614.01	220.72	204.90	1,314.44	15.82
2	Eastern Grid	840.11	64.24	62.89	854.72	1.35
	<b>Total</b>	<b>2,454.12</b>	<b>284.96</b>	<b>267.79</b>	<b>2,169.16</b>	<b>17.17</b>

**Note: Generation-Load Summary for August 07, 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	1,581.05	257.13	240.10	1,236.70	17.03
2	Eastern Grid	437.74	51.39	52.76	473.57	-1.37
	<b>Total</b>	<b>2,018.79</b>	<b>308.52</b>	<b>292.86</b>	<b>1,710.27</b>	<b>15.66</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 8, 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	187.10	400kV THP - Siliguri Fdr- I	268.67	+	400kV THP-SIL II tripped at 00:25hrs(06.08.2020)
		Unit- II	182.19	400kV THP - Siliguri Fdr- II	265.53	+	
		Unit- III	187.39	400kV THP - Siliguri Fdr- IV	259.58	+	
		Unit- IV	187.06	400kV THP - Malbase Fdr- III	304.48	+	
		Unit- V	187.19	400kV Malbase - Siliguri	245.38	+	
		Unit- VI	185.67	-	-	-	
		<b>Total</b>	<b>1,116.60</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.642%</b>		
2	720MW MHP	Unit-I	197.31	400kV MHP - Jigmeling Fdr - I	260.20	+	400kV MHP-JLG IV Standby.
		Unit-II	195.95	400kV MHP - Jigmeling Fdr - II	241.90	+	
		Unit-III	190.10	400kV MHP - Jigmeling Fdr - III	271.50	+	
		Unit-IV	190.73	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>774.09</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.063%</b>		
3	336MW CHP	Unit- I	91.51	220kV CHP - Birpara Fdr- I	127.18	+	
		Unit- II	91.09	220kV CHP - Birpara Fdr- II	127.32	+	
		Unit- III	91.71	220kV CHP - Malbase Fdr- III	170.54	+	
		Unit- IV	91.47	220kV CHP - Semtokha Fdr- IV	-68.95	-	
		-	-	220kV Malbase - Birpara Fdr.	78.90	+	
		-	-	66kV CHP - Chumdo Fdr.	0.60	+	
		-	-	66kV CHP - Gedu Fdr.	8.17	+	
		-	-	3x3MVA, 66/11kV TFR	0.77	+	
		<b>Total</b>	<b>365.78</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.041%</b>		
4	24MW BHP (U/S)	Unit- I	11.82	220kV BHP - Semtokha Fdr.	87.72	+	
		Unit- II	11.82	66kV BHP - Lobeysa Fdr.	15.90	+	
		<b>Total</b>	<b>23.64</b>	220kV BHP - Tsirang Fdr.	-38.28	+	
	40MW BHP (L/S)	Unit- I	21.00	5MVA, 66/11kV TFR	0.44	+	
		Unit- II	20.09	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>41.09</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-2.555%</b>		
5	126MW DHPC	Unit-I	63.41	220kV DHPC - Tsirang Fdr.	126.30	+	
		Unit-II	63.38	220kV Jigmeling - Dagapela Fdr.	1.00	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>126.79</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.386%</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Fdr- I	42.40	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	22.40	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.26	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	57.40	+	
		-	-	132kV Motanga - Rangia Fdr.	40.57	+	
		-	-	220kV Tsirang - Jigmeling	84.71	+	
		<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 08, 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	1,673.90	216.63	199.70	1,372.56	16.93
2	Eastern Grid	840.09	53.23	51.80	871.57	1.43
	<b>Total</b>	<b>2,513.99</b>	<b>269.86</b>	<b>251.50</b>	<b>2,244.13</b>	<b>18.36</b>

**Note: Generation-Load Summary for August 08, 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	1589.42	240.71	222.96	1,262.32	17.75
2	Eastern Grid	439	41.23	40.71	484.16	0.52
	<b>Total</b>	<b>2,028.42</b>	<b>281.94</b>	<b>263.67</b>	<b>1,746.48</b>	<b>18.27</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.
- This report is generated to give an idea of the generation & load flow for the system at a particular instant.