

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

Maximum Load/Demand till Date

Date:	September 27, 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	187.68	400kV THP - Siliguri Fdr- I	274.48	+	
		Unit- II	186.77	400kV THP - Siliguri Fdr- II	271.87	+	
		Unit- III	188.29	400kV THP - Siliguri Fdr- IV	266.05	+	
		Unit- IV	187.4	400kV THP - Malbase Fdr- III	293.99	+	
		Unit- V	187.66	400kV Malbase - Siliguri	251.69	+	
		Unit- VI	187.66	-	-	-	
		<b>Total</b>	<b>1,125.46</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.694%</b>		
2	720MW MHP	Unit-I	197.80	400kV MHP - Jigmeling Fdr - I	294.51	+	Unit-III under Shutdown (22/09/20-17/10/2020). 400kV MHP-JLG Fdr II under Breakdown. 400kV MHP-JLG Fdr IV under shutdown.
		Unit-II	197.73	400kV MHP - Jigmeling Fdr - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	295.28	+	
		Unit-IV	197.39	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>592.92</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.528%</b>		
3	336MW CHP	Unit- I	91.68	220kV CHP - Birpara Fdr- I	122.43	+	
		Unit- II	91.49	220kV CHP - Birpara Fdr- II	122.27	+	
		Unit- III	91.65	220kV CHP - Malbase Fdr- III	148.39	+	
		Unit- IV	91.70	220kV CHP - Semtokha Fdr- IV	-40.71	-	
		-	-	220kV Malbase - Birpara Fdr.	88.46	+	
		-	-	66kV CHP - Chumdo Fdr.	5.46	+	
		-	-	66kV CHP - Gedu Fdr.	7.06	+	
		-	-	3x3MVA, 66/11kV TFR	1.44	+	
		<b>Total</b>	<b>366.52</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.049%</b>		
4	24MW BHP (U/S)	Unit- I	11.82	220kV BHP - Semtokha Fdr.	72.37	+	
		Unit- II	11.82	66kV BHP - Lobeyasa Fdr.	17.66	+	
		<b>Total</b>	<b>23.64</b>	220kV BHP - Tsirang Fdr.	-25.22	-	
	40MW BHP (L/S)	Unit- I	20.44	5MVA, 66/11kV TFR	0.66	+	
		Unit- II	20.62	30MVA ICT, 220/66kV			
<b>Total</b>	<b>41.06</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-1.190%</b>				
5	126MW DHPC	Unit-I	63.42	220kV DHPC - Tsirang Fdr.	126.21	+	
		Unit-II	63.43	220kV Jigmeling - Dagapela Fdr.	2.10	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>126.85</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.505%</b>		
6	60MW KHP	Unit- I	16.50	132kV KHP - Nangkor Fdr- I	37.89	+	
		Unit-II	16.50	132kV KHP - Kilikhar Fdr- II	26.88	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	46.67	+	
		-	-	132kV Motanga - Rangia Fdr.	49.92	+	
		-	-	220kV Tsirang - Jigmeling	95.46	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.379%</b>		

**Note: Generation-Load Summary for September 27, 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	1,683.53	190.82	173.80	1,397.25	17.02
2	Eastern Grid	658.92	68.00	63.96	686.38	4.04
	<b>Total</b>	<b>2,342.45</b>	<b>258.82</b>	<b>237.76</b>	<b>2,083.63</b>	<b>21.06</b>

**Note: Generation-Load Summary for September 27, 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	1419.96	276.50	264.72	1097.96	11.78
2	Eastern Grid	612.26	50.78	44.25	606.98	6.53
	<b>Total</b>	<b>2,032.22</b>	<b>327.28</b>	<b>308.97</b>	<b>1,704.94</b>	<b>18.31</b>

**NOTES: KHP & MHEP load 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>September 28, 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	187.32	400kV THP - Siliguri Fdr- I	281.02	+	
		Unit- II	185.25	400kV THP - Siliguri Fdr- II	279.42	+	
		Unit- III	187.98	400kV THP - Siliguri Fdr- IV	272.34	+	
		Unit- IV	187.04	400kV THP - Malbase Fdr- III	273.43	+	
		Unit- V	187.63	400kV Malbase - Siliguri	264.54	+	
		Unit- VI	186.51	-	-	-	
		<b>Total</b>	<b>1,121.73</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.384%</b>		
2	720MW MHP	Unit-I	197.76	400kV MHP - Jigmeling Fdr - I	294.52	+	Unit III under Shutdown (22/09/2020-17/10/2020) 400kV MHP-JLG Fdr II under Breakdown. 400kV MHP-JLG Fdr IV under shutdown
		Unit-II	197.73	400kV MHP - Jigmeling Fdr - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	295.33	+	
		Unit-IV	197.23	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		<b>Total</b>	<b>592.72</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>0.484%</b>		
3	336MW CHP	Unit- I	91.52	220kV CHP - Birpara Fdr- I	124.75	+	
		Unit- II	91.18	220kV CHP - Birpara Fdr- II	124.78	+	
		Unit- III	91.14	220kV CHP - Malbase Fdr- III	176.07	+	
		Unit- IV	92.03	220kV CHP - Semtokha Fdr- IV	-68.83	-	
		-	-	220kV Malbase - Birpara Fdr.	70.86	+	
		-	-	66kV CHP - Chumdo Fdr.	1.25	+	
		-	-	66kV CHP - Gedu Fdr.	7.08	+	
		-	-	3x3MVA, 66/11kV TFR	0.80	+	
		<b>Total</b>	<b>365.87</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-0.008%</b>		
4	24MW BHP (U/S)	Unit- I	11.82	220kV BHP - Semtokha Fdr.	90.23	+	
		Unit- II	11.82	66kV BHP - Lobeysa Fdr.	15.80	+	
		<b>Total</b>	<b>23.64</b>	220kV BHP - Tsirang Fdr.	-40.75	-	
	40MW BHP (L/S)	Unit- I	20.27	5MVA, 66/11kV TFR	0.30	+	
		Unit- II	20.67	30MVA ICT, 220/66kV			
		<b>Total</b>	<b>40.94</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>-2.443%</b>		
5	126MW DHPC	Unit-I	63.44	220kV DHPC - Tsirang Fdr.	126.27	+	
		Unit-II	63.40	220kV Jigmeling - Dagapela Fdr.	1.20	+	
		-	-	5MVA, 220/33kV TFR			
		<b>Total</b>	<b>126.84</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	22.50	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	16.50	132kV Gelephu - Salakati Fdr.	50.39	+	
		-	-	132kV Motanga - Rangia Fdr.	45.59	+	
		-	-	220kV Tsirang - Jigmeling	81.21	+	
		<b>Total</b>	<b>66.00</b>	<b>Error at Station/Auxiliary Consumption/Losses</b>	<b>1.318%</b>		

**Note: Generation-Load summary for September 28, 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	1,679.02	180.10	166.24	1,417.71	13.86
2	Eastern Grid	658.72	54.10	50.36	685.83	3.74
	<b>Total</b>	<b>2,337.74</b>	<b>234.20</b>	<b>216.60</b>	<b>2,103.54</b>	<b>17.60</b>

**Note: Generation-Load Summary for September 28, 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	1586.13	236.99	219.86	1,307.29	17.13
2	Eastern Grid	697.76	39.81	31.49	699.80	8.32
	<b>Total</b>	<b>2,283.89</b>	<b>276.80</b>	<b>251.35</b>	<b>2,007.09</b>	<b>25.45</b>

**NOTES: KHP, MHP load 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.