

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

Maximum Load/Demand till Date

Date: **August 19, 2021**  
Hours: **19:00 Hours**

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	185.74	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	186.30	400kV THP - Siliguri Line - II	354.87	+	
		Unit- III	184.54	400kV THP - Siliguri Line- IV	339.71	+	
		Unit- IV	185.22	400kV THP - Malbase Line - III	410.46	+	
		Unit- V	185.83	400kV Malbase - Siliguri Line	317.83	+	
		Unit- VI	185.64	-	-	-	
		<b>Total</b>	<b>1,113.27</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.739%</b>		
2	720MW MHP	Unit-I	197.79	400kV MHP - Jigmeling Line - I	379.51	+	400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line I(Interim) on standby.
		Unit-II	191.90	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	180.89	400kV MHP - Jigmeling Line - III	381.32	+	
		Unit-IV	194.17	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmo Line - I	0.00		
		-	-	132kV MHP - Yurmo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-25.30	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	190.50	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	290.45	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	290.45	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	35.80	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	36.00	+	
		-	-	220kV Tsirang - Jigmeling Line	99.36	+	
-	-	132kV Gelephu - Salakati Line	26.64	+			
<b>Total</b>	<b>764.75</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.513%</b>				
3	336MW CHP	Unit- I	91.59	220kV CHP - Birpara Line- I	102.96	+	
		Unit- II	90.65	220kV CHP - Birpara Line- II	103.00	+	
		Unit- III	91.54	220kV CHP - Malbase Line- III	123.65	+	
		Unit- IV	91.71	220kV CHP - Semtokha Line- IV	16.53	+	
		-	-	220kV Malbase - Birpara Line	72.53	+	
		-	-	66kV CHP - Chumdo Line	11.15	+	
		-	-	66kV CHP - Gedu Line	5.52	+	
		-	-	3x3MVA, 66/11kV TFR	1.30	+	
		<b>Total</b>	<b>365.49</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.378%</b>		
4	24MW BHP (U/S)	Unit- I	20.40	220kV BHP - Semtokha Line	57.70	+	
		Unit- II	21.10	66kV BHP - Lobeysa Line	29.43	+	
		<b>Total</b>	<b>41.50</b>	220kV BHP - Tsirang Line	-22.64	-	
5	40MW BHP (L/S)	Unit- I	12.30	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	12.20	30MVA ICT, 220/66kV (HV)	6.49	+	
		<b>Total</b>	<b>24.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.939%</b>		
6	126MW DHP	Unit-I	63.66	220kV DHP - Tsirang Line	126.23	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.18	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.00	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		<b>Total</b>	<b>126.84</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.244%</b>		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	36.19	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	28.43	+	
		Unit- III	16.32	5MVA, 132/11kV TFR	0.41	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	45.75	+	
		<b>Total</b>	<b>65.82</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>1.200%</b>		

**Note: Generation-Load Summary (MW) for August 19, 2021 at 19:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW, %)	Auxiliary Consumption & Transformation Losses (MW) at Generator end.
1	Western Grid	1,671.60	281.34	272.80	1,290.90	8.54
2	Eastern Grid	830.57	86.14	81.43	843.79	4.71
	<b>Total</b>	<b>2,502.17</b>	<b>367.48</b>	<b>354.23</b>	<b>2,134.69</b>	<b>13.25</b>

**Note: Generation-Load Summary for August 19, 2020 at 19:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses
1	Western Grid	1,678.60	212.68	198.04	1,298.11	14.64
2	Eastern Grid	851.57	65.07	60.87	640.96	4.20
	<b>Total</b>	<b>2,530.17</b>	<b>277.75</b>	<b>258.91</b>	<b>1,939.07</b>	<b>18.84</b>

**NOTE-BHP, KHP and MHPA data collected from site**

1. 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:

- i) 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.
- ii) The clocks of all the locations are not synchronized.

2. 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 20, 2021</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	Transmission Lines and Elements	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	185.21	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	186.76	400kV THP - Siliguri Line - II	363.32	+	
		Unit- III	184.78	400kV THP - Siliguri Line- IV	346.39	+	
		Unit- IV	185.11	400kV THP - Malbase Line - III	394.73	+	
		Unit- V	185.75	400kV Malbase - Siliguri Line	330.65	+	
		Unit- VI	185.52	-	-	-	
		<b>Total</b>	<b>1,113.13</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.781%</b>		
2	720MW MHP	Unit-I	197.84	400kV MHP - Jigmeling Line - I	379.70	+	400kV MHP-JLG Line II & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line I(Interim) on standby.
		Unit-II	191.87	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	181.00	400kV MHP - Jigmeling Line - III	381.80	+	
		Unit-IV	195.19	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmo Line - I	0.00		
		-	-	132kV MHP - Yurmo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-52.40	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	199.25	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	300.37	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	300.37	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	25.60	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	25.70	+	
		-	-	220kV Tsirang - Jigmeling Line	105.36	+	
-	-	132kV Gelephu - Salakati Line	24.51	+			
<b>Total</b>	<b>765.90</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.574%</b>				
3	336MW CHP	Unit- I	92.08	220kV CHP - Birpara Line- I	102.10	+	
		Unit- II	90.93	220kV CHP - Birpara Line- II	102.31	+	
		Unit- III	91.63	220kV CHP - Malbase Line- III	138.29	+	
		Unit- IV	91.46	220kV CHP - Semtokha Line- IV	9.73	+	
		-	-	220kV Malbase - Birpara Line	58.73	+	
		-	-	66kV CHP - Chumdo Line	7.42	+	
		-	-	66kV CHP - Gedu Line	5.08	+	
		-	-	3x3MVA, 66/11kV TFR	0.83	+	
<b>Total</b>	<b>366.10</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.093%</b>				
4	24MW BHP (U/S)	Unit- I	12.10	220kV BHP - Semtokha Line	54.86	+	
		Unit- II	12.30	66kV BHP - Lobeyssa Line	27.00	+	
		<b>Total</b>	<b>24.40</b>	220kV BHP - Tsirang Line	-17.94	-	
5	40MW BHP (L/S)	Unit- I	20.60	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	4.64	+	
		<b>Total</b>	<b>41.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.952%</b>		
6	126MW DHP	Unit-I	63.60	220kV DHP - Tsirang Line	126.19	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.08	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.40	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		<b>Total</b>	<b>126.68</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.150%</b>		
7	60MW KHP	Unit- I	16.63	132kV KHP - Nangkhoh Line	41.34	+	
		Unit-II	16.49	132kV KHP - Kilikhar Line	23.28	+	
		Unit- III	15.64	5MVA, 132/11kV TFR	0.50	+	
		Unit- IV	16.57	132kV Motanga - Rangia Line	35.46	+	
		<b>Total</b>	<b>65.33</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.321%</b>		

**Note: Generation-Load Summary (MW) for August 20, 2021 at 09:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW) at Generator end.
1	Western Grid	1,672.01	263.15	254.04	1,303.50	9.11
2	Eastern Grid	831.23	76.63	72.02	859.96	4.61
	<b>Total</b>	<b>2,503.24</b>	<b>339.78</b>	<b>326.06</b>	<b>2,163.46</b>	<b>13.72</b>

**Note: Generation-Load Summary for August 20, 2020 at 09:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses
1	Western Grid	1,647.04	205.94	190.32	1,371.67	15.62
2	Eastern Grid	847.49	40.25	38.75	876.76	1.50
	<b>Total</b>	<b>2,494.53</b>	<b>246.19</b>	<b>229.07</b>	<b>2,248.43</b>	<b>17.12</b>

**NOTE-BHP 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.