

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

Maximum Load/Demand till Date

Date: **August 24, 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	185.70	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	185.82	400kV THP - Siliguri Line - II	352.41	+	
		Unit- III	184.87	400kV THP - Siliguri Line- IV	336.32	+	
		Unit- IV	184.40	400kV THP - Malbase Line - III	414.29	+	
		Unit- V	184.82	400kV Malbase - Siliguri Line	314.12	+	
		Unit- VI	185.91	-	-	-	
		<b>Total</b>	<b>1,111.52</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.765%</b>		
2	720MW MHP	Unit-I	197.79	400kV MHP - Jigmeling Line - I	389.94	+	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	194.58	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	197.69	400kV MHP - Jigmeling Line - III	392.17	+	
		Unit-IV	197.12	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)	-21.10	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	196.30	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	296.70	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	296.70	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	36.20	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	36.20	+	
		-	-	220kV Tsirang - Jigmeling Line	96.29	+	
-	-	132kV Gelephu - Salakati Line	38.31	+			
<b>Total</b>	<b>787.18</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.644%</b>				
3	336MW CHP	Unit- I	91.70	220kV CHP - Birpara Line- I	99.84	+	
		Unit- II	90.94	220kV CHP - Birpara Line- II	99.99	+	
		Unit- III	92.01	220kV CHP - Malbase Line- III	128.53	+	
		Unit- IV	91.54	220kV CHP - Semtokha Line- IV	18.89	+	
		-	-	220kV Malbase - Birpara Line	62.67	+	
		-	-	66kV CHP - Chumdo Line	10.33	+	
		-	-	66kV CHP - Gedu Line	6.06	+	
		-	-	3x3MVA, 66/11kV TFR	1.23	+	
		<b>Total</b>	<b>366.19</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.360%</b>		
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	58.50	+	
		Unit- II	12.20	66kV BHP - Lobeysa Line	31.68	+	
		<b>Total</b>	<b>24.60</b>	220kV BHP - Tsirang Line	-25.41	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.91	+	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	8.71	+	
		<b>Total</b>	<b>41.90</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>1.233%</b>		
6	126MW DHP	Unit-I	63.30	220kV DHP - Tsirang Line	125.99	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.15	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.00	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		<b>Total</b>	<b>126.45</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.127%</b>		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	36.12	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	29.07	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.49	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	45.33	+	
		<b>Total</b>	<b>66.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.479%</b>		

**Note: Generation-Load Summary (MW) for August 24, 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	1,670.66	309.02	300.22	1,265.35	8.80
2	Eastern Grid	853.18	76.13	70.74	873.34	5.39
	<b>Total</b>	<b>2,523.84</b>	<b>385.15</b>	<b>370.96</b>	<b>2,138.69</b>	<b>14.19</b>

**Note: Generation-Load Summary for August 24, 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	1,683.60	196.33	151.25	1,386.70	45.08
2	Eastern Grid	788.09	68.86	63.98	819.80	4.88
	<b>Total</b>	<b>2,471.69</b>	<b>265.19</b>	<b>215.23</b>	<b>2,206.50</b>	<b>49.96</b>

**NOTE-BHP 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 25, 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	184.81	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	181.31	400kV THP - Siliguri Line - II	379.77	+	
		Unit- III	186.35	400kV THP - Siliguri Line- IV	363.88	+	
		Unit- IV	186.39	400kV THP - Malbase Line - III	356.61	+	
		Unit- V	184.80	400kV Malbase - Siliguri Line	358.39	+	
		Unit- VI	186.17	-	-	-	
		<b>Total</b>	<b>1,109.83</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.862%</b>		
2	720MW MHP	Unit-I	197.90	400kV MHP - Jigmeling Line - I	390.14	+	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. 500MVA ICT at JLG tripped.
		Unit-II	193.95	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	197.63	400kV MHP - Jigmeling Line - III	391.86	+	
		Unit-IV	196.74	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)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	191.25	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	288.33	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	288.33	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	31.70	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	31.80	+	
		-	-	220kV Tsirang - Jigmeling Line	64.66	+	
-	-	132kV Gelephu - Salakati Line	35.35	+			
<b>Total</b>	<b>786.22</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.537%</b>				
3	336MW CHP	Unit- I	91.94	220kV CHP - Birpara Line- I	97.10	+	
		Unit- II	90.87	220kV CHP - Birpara Line- II	97.45	+	
		Unit- III	91.67	220kV CHP - Malbase Line- III	182.20	+	
		Unit- IV	91.64	220kV CHP - Semtokha Line- IV	-23.88	-	
		-	-	220kV Malbase - Birpara Line	16.82	+	
		-	-	66kV CHP - Chumdo Line	4.52	+	
		-	-	66kV CHP - Gedu Line	7.27	+	
		-	-	3x3MVA, 66/11kV TFR	0.77	+	
		<b>Total</b>	<b>366.12</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.188%</b>		
4	24MW BHP (U/S)	Unit- I	12.40	220kV BHP - Semtokha Line	91.70	+	
		Unit- II	12.20	66kV BHP - Lobeyasa Line	30.51	+	
		<b>Total</b>	<b>24.60</b>	220kV BHP - Tsirang Line	-57.20	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	7.51	+	
		<b>Total</b>	<b>41.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.753%</b>		
6	126MW DHP	Unit-I	63.55	220kV DHP - Tsirang Line	126.12	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.06	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.10	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		<b>Total</b>	<b>126.61</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.150%</b>		
7	60MW KHP	Unit- I	16.59	132kV KHP - Nangkhoh Line	41.00	+	
		Unit-II	16.54	132kV KHP - Kilikhar Line	24.37	+	
		Unit- III	16.61	5MVA, 132/11kV TFR	0.30	+	
		Unit- IV	16.63	132kV Motanga - Rangia Line	38.84	+	
		<b>Total</b>	<b>66.37</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.055%</b>		

**Note: Generation-Load Summary (MW) for August 25, 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	1,668.96	290.89	281.04	1,313.41	9.85
2	Eastern Grid	852.59	75.15	70.23	842.10	4.92
	<b>Total</b>	<b>2,521.55</b>	<b>366.04</b>	<b>351.27</b>	<b>2,155.51</b>	<b>14.77</b>

**Note: Generation-Load Summary for August 25, 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	1,685.33	180.83	157.11	1,418.00	23.72
2	Eastern Grid	856.97	51.03	46.09	892.44	4.94
	<b>Total</b>	<b>2,542.30</b>	<b>231.86</b>	<b>203.20</b>	<b>2,310.44</b>	<b>28.66</b>

**NOTE-BHP, KHP and MHPA 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.
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