

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

Maximum Load/Demand till Date

Date: **September 6, 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	185.23	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	186.26	400kV THP - Siliguri Line - II	354.83	+	
		Unit- III	185.06	400kV THP - Siliguri Line- IV	339.02	+	
		Unit- IV	186.78	400kV THP - Malbase Line - III	412.17	+	
		Unit- V	185.92	400kV Malbase - Siliguri Line	315.07	+	
		Unit- VI	186.17	-	-	-	
		<b>Total</b>	<b>1,115.42</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.843%</b>		
2	720MW MHP	Unit-I	197.81	400kV MHP - Jigmeling Line - I	391.20	+	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	197.02	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	197.84	400kV MHP - Jigmeling Line - III	393.21	+	
		Unit-IV	197.13	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)	-14.90	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	196.34	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	295.63	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	296.16	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	36.60	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	36.60	+	
		-	-	220kV Tsirang - Jigmeling Line	90.47	+	
-	-	132kV Gelephu - Salakati Line	23.04	+			
<b>Total</b>	<b>789.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.682%</b>				
3	336MW CHP	Unit- I	91.17	220kV CHP - Birpara Line- I	98.98	+	
		Unit- II	91.38	220kV CHP - Birpara Line- II	98.84	+	
		Unit- III	90.94	220kV CHP - Malbase Line- III	121.54	+	
		Unit- IV	91.54	220kV CHP - Semtokha Line- IV	26.74	+	
		-	-	220kV Malbase - Birpara Line	67.96	+	
		-	-	66kV CHP - Chumdo Line	10.35	+	
		-	-	66kV CHP - Gedu Line	5.70	+	
		-	-	3x3MVA, 66/11kV TFR	1.28	+	
		<b>Total</b>	<b>365.03</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.438%</b>		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	84.00	+	
		Unit- II	12.20	66kV BHP - Lobeyssa Line	11.96	+	
		<b>Total</b>	<b>24.50</b>	220kV BHP - Tsirang Line	-30.83	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.89	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	-11.65	-	
		<b>Total</b>	<b>41.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.422%</b>		
6	126MW DHP	Unit-I	63.66	220kV DHP - Tsirang Line	126.20	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.07	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.90	+	
		-	-	5MVA, 220/33kV TFR	0.40	+	
		<b>Total</b>	<b>126.73</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.103%</b>		
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhon Line	37.20	+	
		Unit-II	16.50	132kV KHP - Kilikhar Line	28.15	+	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.41	+	
		Unit- IV	16.50	132kV Motanga - Rangia Line	42.00	+	
		<b>Total</b>	<b>66.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.359%</b>		

**Note: Generation-Load Summary (MW) for September 06, 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	1,673.48	308.31	298.80	1,274.70	9.51
2	Eastern Grid	855.80	93.10	87.47	853.17	5.63
	<b>Total</b>	<b>2,529.28</b>	<b>401.41</b>	<b>386.27</b>	<b>2,127.87</b>	<b>15.14</b>

**Note: Generation-Load Summary for September 06, 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	1,659.09	199.05	183.43	1,373.71	15.62
2	Eastern Grid	847.48	62.50	58.73	871.31	3.77
	<b>Total</b>	<b>2,506.57</b>	<b>261.55</b>	<b>242.16</b>	<b>2,245.02</b>	<b>19.39</b>

**NOTE-BHP and MHP 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>September 7, 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	185.41	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	185.53	400kV THP - Siliguri Line - II	361.29	+	
		Unit- III	186.46	400kV THP - Siliguri Line- IV	344.74	+	
		Unit- IV	184.04	400kV THP - Malbase Line - III	397.34	+	
		Unit- V	185.10	400kV Malbase - Siliguri Line	328.50	+	
		Unit- VI	185.26	-	-	-	
		<b>Total</b>	<b>1,111.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.758%</b>		
2	720MW MHP	Unit-I	197.81	400kV MHP - Jigmeling Line - I	391.58	+	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. 500MVA transformer tripped.
		Unit-II	196.51	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	197.60	400kV MHP - Jigmeling Line - III	393.59	+	
		Unit-IV	196.65	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)	192.00	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	290.50	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	289.69	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	33.22	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	33.31	+	
		-	-	220kV Tsirang - Jigmeling Line	67.26	+	
-	-	132kV Gelephu - Salakati Line	38.35	+			
<b>Total</b>	<b>788.57</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.432%</b>				
3	336MW CHP	Unit- I	91.71	220kV CHP - Birpara Line- I	102.54	+	
		Unit- II	91.13	220kV CHP - Birpara Line- II	102.12	+	
		Unit- III	91.42	220kV CHP - Malbase Line- III	152.74	+	
		Unit- IV	90.72	220kV CHP - Semtokha Line- IV	-6.34	-	
		-	-	220kV Malbase - Birpara Line	48.53	+	
		-	-	66kV CHP - Chumdo Line	5.66	+	
		-	-	66kV CHP - Gedu Line	7.04	+	
		-	-	3x3MVA, 66/11kV TFR	0.80	+	
		<b>Total</b>	<b>364.98</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.115%</b>		
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	112.21	+	
		Unit- II	12.20	66kV BHP - Lobeyssa Line	6.80	+	
		<b>Total</b>	<b>24.50</b>	220kV BHP - Tsirang Line	-54.14	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.88	+	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	-16.38	-	
		<b>Total</b>	<b>41.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.830%</b>		
6	126MW DHP	Unit-I	63.66	220kV DHP - Tsirang Line	126.20	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.07	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.10	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		<b>Total</b>	<b>126.73</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.181%</b>		
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhoh Line	41.14	+	
		Unit-II	16.48	132kV KHP - Kilikhar Line	23.60	+	
		Unit- III	16.00	5MVA, 132/11kV TFR	0.28	+	
		Unit- IV	16.59	132kV Motanga - Rangia Line	36.72	+	
		<b>Total</b>	<b>65.56</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.824%</b>		

**Note: Generation-Load Summary (MW) for September 07, 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	1,669.81	314.83	306.30	1,287.72	8.53
2	Eastern Grid	854.13	74.13	70.19	847.26	3.94
	<b>Total</b>	<b>2,523.94</b>	<b>388.96</b>	<b>376.49</b>	<b>2,134.98</b>	<b>12.47</b>

**Note: Generation-Load Summary for September 07, 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	1,679.21	189.68	174.78	1,416.98	14.90
2	Eastern Grid	819.18	56.55	50.82	835.18	5.73
	<b>Total</b>	<b>2,498.39</b>	<b>246.23</b>	<b>225.60</b>	<b>2,252.16</b>	<b>20.63</b>

**NOTE-BHP and MHP 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.