

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

Maximum Load/Demand till Date

Date: **October 13, 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	117.72	400kV THP - Siliguri Line - I	0.00		Unit-II on Standby. 400kV THP-Siliguri line I under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	161.48	+	
		Unit- III	98.79	400kV THP - Siliguri Line- IV	154.81	+	
		Unit- IV	99.66	400kV THP - Malbase Line - III	232.81	+	
		Unit- V	117.78	400kV Malbase - Siliguri Line	135.51	+	
		Unit- VI	119.60	-	-	-	
		<b>Total</b>	<b>553.55</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.804%</b>		
2	720MW MHP	Unit-I	120.12	400kV MHP - Jigmeling Line - I	165.03	+	Unit-III under shutdown. 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	115.12	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	166.90	+	
		Unit-IV	100.07	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)	33.28	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	71.99	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	111.70	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	112.00	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	28.68	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	29.06	+	
		-	-	220kV Tsirang - Jigmeling Line	27.32	+	
-	-	132kV Gelephu - Salakati Line	12.00				
<b>Total</b>	<b>335.31</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>1.008%</b>				
3	336MW CHP	Unit- I	72.49	220kV CHP - Birpara Line- I	61.66	+	66kV CHP_Gedu line opened at 10:01hrs(08/10/2021) to regulate 66kV voltage.
		Unit- II	71.38	220kV CHP - Birpara Line- II	61.59	+	
		Unit- III	73.73	220kV CHP - Malbase Line- III	94.94	+	
		Unit- IV	72.68	220kV CHP - Semtokha Line- IV	41.28	+	
		-	-	220kV Malbase - Birpara Line	26.67	+	
		-	-	66kV CHP - Chumdo Line	28.63	+	
		-	-	66kV CHP - Gedu Line	0.00		
		-	-	3x3MVA, 66/11kV TFR	1.30	+	
		<b>Total</b>	<b>290.28</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.303%</b>		
4	24MW BHP (U/S)	Unit- I	8.90	220kV BHP - Semtokha Line	42.66	+	-
		Unit- II	8.70	66kV BHP - Lobeyssa Line	30.05	+	
		<b>Total</b>	<b>17.60</b>	220kV BHP - Tsirang Line	-22.94	-	
5	40MW BHP (L/S)	Unit- I	16.30	5MVA, 66/11kV TFR	0.00	+	-
		Unit- II	16.40	30MVA ICT, 220/66kV (HV)	12.26	+	
		<b>Total</b>	<b>32.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>1.054%</b>		
6	126MW DHP	Unit-I	53.37	220kV DHP - Tsirang Line	53.12	+	DHP Unit II on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	2.55	+	
		-	-	5MVA, 220/33kV TFR	0.10	+	
		<b>Total</b>	<b>53.37</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.281%</b>		
7	60MW KHP	Unit- I	15.03	132kV KHP - Nangkhoh Line	33.83	+	-
		Unit-II	15.12	132kV KHP - Kilikhar Line	25.37	+	
		Unit- III	15.04	5MVA, 132/11kV TFR	0.46	+	
		Unit- IV	15.09	132kV Motanga - Rangia Line	36.10	+	
		<b>Total</b>	<b>60.28</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>1.030%</b>		

**Note: Generation-Load Summary (MW) for October 13, 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	947.50	318.46	315.00	601.72	3.46
2	Eastern Grid	395.59	79.12	75.12	343.79	4.00
	<b>Total</b>	<b>1,343.09</b>	<b>397.58</b>	<b>390.12</b>	<b>945.51</b>	<b>7.46</b>

**Note: Generation-Load Summary for October 13, 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	1,192.38	196.35	185.82	915.87	10.53
2	Eastern Grid	504.46	68.29	65.76	516.43	2.53
	<b>Total</b>	<b>1,696.84</b>	<b>264.64</b>	<b>251.58</b>	<b>1,432.30</b>	<b>13.06</b>

**NOTE-BHP, KHP, JLG 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>October 14, 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	117.97	400kV THP - Siliguri Line - I	0.00		Unit-II on standby. 400kV THP-Siliguri line I under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	160.48	+	
		Unit- III	99.13	400kV THP - Siliguri Line- IV	152.36	+	
		Unit- IV	99.32	400kV THP - Malbase Line - III	208.32	+	
		Unit- V	87.83	400kV Malbase - Siliguri Line	138.98	+	
		Unit- VI	119.91	-	-	-	
		<b>Total</b>	<b>524.16</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.572%</b>		
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	161.36	+	MHP Unit I on standby. 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	114.83	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	110.32	400kV MHP - Jigmeling Line - III	162.46	+	
		Unit-IV	100.10	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)	9.20	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	76.40	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	117.50	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	117.50	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.30	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.60	+	
		-	-	220kV Tsirang - Jigmeling Line	35.80	+	
-	-	132kV Gelephu - Salakati Line	13.30	+			
<b>Total</b>	<b>325.25</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.440%</b>				
3	336MW CHP	Unit- I	68.91	220kV CHP - Birpara Line- I	51.46	+	66kV CHP_Gedu line opened at 10:01hrs (08/10/2021) to regulate 66kV voltage.
		Unit- II	67.59	220kV CHP - Birpara Line- II	51.47	+	
		Unit- III	72.42	220kV CHP - Malbase Line- III	107.61	+	
		Unit- IV	71.17	220kV CHP - Semtokha Line- IV	56.21	+	
		-	-	220kV Malbase - Birpara Line	0.66	+	
		-	-	66kV CHP - Chumdo Line	11.58	+	
		-	-	66kV CHP - Gedu Line	0.00		
		-	-	3x3MVA, 66/11kV TFR	0.80	+	
<b>Total</b>	<b>280.09</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.343%</b>				
4	24MW BHP (U/S)	Unit- I	8.80	220kV BHP - Semtokha Line	32.60	+	
		Unit- II	8.60	66kV BHP - Lobeysa Line	28.50	+	
		<b>Total</b>	<b>17.40</b>	220kV BHP - Tsirang Line	-14.15	-	
5	40MW BHP (L/S)	Unit- I	14.80	5MVA, 66/11kV TFR		+	
		Unit- II	14.80	30MVA ICT, 220/66kV (HV)	11.10	+	
		<b>Total</b>	<b>29.60</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.106%</b>		
6	126MW DHP	Unit-I	51.35	220kV DHP - Tsirang Line	51.10	+	DHP Unit II on standby. 220kV DHP_Dagapela Line on standby.
		Unit-II	0.00	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	1.95	+	
		-	-	5MVA, 220/33kV TFR		+	
		<b>Total</b>	<b>51.35</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.487%</b>		
7	60MW KHP	Unit- I	14.98	132kV KHP - Nangkhon Line	37.57	+	
		Unit-II	14.98	132kV KHP - Kilikhar Line	21.59	+	
		Unit- III	15.01	5MVA, 132/11kV TFR	0.30	+	
		Unit- IV	14.96	132kV Motanga - Rangia Line	30.83	+	
		<b>Total</b>	<b>59.93</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.784%</b>		

**Note: Generation-Load Summary (MW) for October 14, 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	902.60	311.39	309.08	555.41	2.31
2	Eastern Grid	385.18	65.45	63.55	355.53	1.90
	<b>Total</b>	<b>1,287.78</b>	<b>376.84</b>	<b>372.63</b>	<b>910.94</b>	<b>4.21</b>

**Note: Generation-Load Summary for October 14, 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	1,123.47	201.62	191.84	864.04	9.78
2	Eastern Grid	477.36	33.25	29.62	501.92	3.63
	<b>Total</b>	<b>1,600.83</b>	<b>234.87</b>	<b>221.46</b>	<b>1,365.96</b>	<b>13.41</b>

**NOTE-BHP & 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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