

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

Maximum Load/Demand till Date

Date: **October 15, 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	0.00	400kV THP - Siliguri Line - I	0.00		Unit I & Unit-II on Standby. 400kV THP-Siliguri line I under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	148.08	+	
		Unit- III	129.62	400kV THP - Siliguri Line- IV	140.54	+	
		Unit- IV	128.90	400kV THP - Malbase Line - III	220.98	+	
		Unit- V	126.99	400kV Malbase - Siliguri Line	122.99	+	
		Unit- VI	129.60	-	-	-	
		<b>Total</b>	<b>515.11</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>1.070%</b>		
2	720MW MHP	Unit-I	150.57	400kV MHP - Jigmeling Line - I	156.53	+	Unit-II & Unit III 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	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	157.46	+	
		Unit-IV	165.34	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)	16.86	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	71.99	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	109.38	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	109.38	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	24.40	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	24.77	+	
		-	-	220kV Tsirang - Jigmeling Line	35.37	+	
-	-	132kV Gelephu - Salakati Line	5.81	+			
<b>Total</b>	<b>315.91</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.608%</b>				
3	336MW CHP	Unit- I	65.49	220kV CHP - Birpara Line- I	56.44	+	66kV CHP_Gedu line opened at 10:01hrs (08/10/2021) to regulate 66kV voltage.
		Unit- II	62.14	220kV CHP - Birpara Line- II	56.54	+	
		Unit- III	71.87	220kV CHP - Malbase Line- III	81.34	+	
		Unit- IV	71.33	220kV CHP - Semtokha Line- IV	52.90	+	
		-	-	220kV Malbase - Birpara Line	29.02	+	
		-	-	66kV CHP - Chumdo Line	21.51	+	
		-	-	66kV CHP - Gedu Line	0.00		
		-	-	3x3MVA, 66/11kV TFR	1.34	+	
		<b>Total</b>	<b>270.83</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.281%</b>		
4	24MW BHP (U/S)	Unit- I	8.50	220kV BHP - Semtokha Line	32.20	+	
		Unit- II	8.50	66kV BHP - Lobeyssa Line	29.10	+	
		<b>Total</b>	<b>17.00</b>	220kV BHP - Tsirang Line	-12.44	-	
5	40MW BHP (L/S)	Unit- I	16.10	5MVA, 66/11kV TFR	0.00		
		Unit- II	16.10	30MVA ICT, 220/66kV (HV)	12.27	+	
		<b>Total</b>	<b>32.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.691%</b>		
6	126MW DHP	Unit-I	50.86	220kV DHP - Tsirang Line	50.60	+	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	2.45	+	
		-	-	5MVA, 220/33kV TFR	0.25	+	
		<b>Total</b>	<b>50.86</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.020%</b>		
7	60MW KHP	Unit- I	14.06	132kV KHP - Nangkhoh Line	31.65	+	
		Unit-II	14.08	132kV KHP - Kilikhar Line	24.45	+	
		Unit- III	14.49	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	14.52	132kV Motanga - Rangia Line	37.82	+	
		<b>Total</b>	<b>57.15</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>1.277%</b>		

**Note: Generation-Load Summary (MW) for October 15, 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	886.06	297.02	292.85	553.61	4.17
2	Eastern Grid	373.06	74.05	71.40	334.38	2.65
	<b>Total</b>	<b>1,259.06</b>	<b>371.07</b>	<b>364.25</b>	<b>887.99</b>	<b>6.82</b>

**Note: Generation-Load Summary for October 15, 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	1,083.98	223.53	214.90	786.45	8.63
2	Eastern Grid	467.00	58.87	55.25	482.13	3.62
	<b>Total</b>	<b>1,550.98</b>	<b>282.40</b>	<b>270.15</b>	<b>1,268.58</b>	<b>12.25</b>

**NOTE-BHP, MHPA and Rangia 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 16, 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	0.00	400kV THP - Siliguri Line - I	0.00		Unit-I & II on standby. 400kV THP-Siliguri line I under breakdown.
		Unit- II	0.00	400kV THP - Siliguri Line - II	155.72	+	
		Unit- III	129.61	400kV THP - Siliguri Line- IV	149.19	+	
		Unit- IV	129.38	400kV THP - Malbase Line - III	205.72	+	
		Unit- V	128.00	400kV Malbase - Siliguri Line	134.69	+	
		Unit- VI	129.00	-	-	-	
		<b>Total</b>	<b>515.99</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.039%</b>		
2	720MW MHP	Unit-I	158.00	400kV MHP - Jigmeling Line - I	160.50	+	MHP Unit II & III 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	0.00	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	161.47	+	
		Unit-IV	165.31	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmo Line - I	0.00		
		-	-	132kV MHP - Yurmo Line - II	0.39		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-8.81	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	79.99		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	123.33	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	123.01	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	16.41	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	16.65	+	
		-	-	220kV Tsirang - Jigmeling Line	44.06	+	
-	-	132kV Gelephu - Salakati Line	9.98	+			
<b>Total</b>	<b>323.31</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.294%</b>				
3	336MW CHP	Unit- I	66.79	220kV CHP - Birpara Line- I	49.26	+	66kV CHP_Gedu line opened at 10:01hrs (08/10/2021) to regulate 66kV voltage.
		Unit- II	64.41	220kV CHP - Birpara Line- II	49.15	+	
		Unit- III	69.87	220kV CHP - Malbase Line- III	96.30	+	
		Unit- IV	69.96	220kV CHP - Semtokha Line- IV	57.24	+	
		-	-	220kV Malbase - Birpara Line	6.48	+	
		-	-	66kV CHP - Chumdo Line	17.36	+	
		-	-	66kV CHP - Gedu Line	0.00		
		-	-	3x3MVA, 66/11kV TFR	0.96	+	
<b>Total</b>	<b>271.03</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.280%</b>				
4	24MW BHP (U/S)	Unit- I	8.50	220kV BHP - Semtokha Line	23.40	+	
		Unit- II	8.30	66kV BHP - Lobeysa Line	27.23	+	
		<b>Total</b>	<b>16.80</b>	220kV BHP - Tsirang Line	-3.36	-	
5	40MW BHP (L/S)	Unit- I	15.52	5MVA, 66/11kV TFR	0.00	+	
		Unit- II	14.97	30MVA ICT, 220/66kV (HV)	10.70	+	
		<b>Total</b>	<b>30.49</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.042%</b>		
6	126MW DHP	Unit-I	50.76	220kV DHP - Tsirang Line	50.53	+	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	1.83	+	
		-	-	5MVA, 220/33kV TFR	0.23	+	
		<b>Total</b>	<b>50.76</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.000%</b>		
7	60MW KHP	Unit- I	14.17	132kV KHP - Nangkhon Line	35.03	+	
		Unit-II	14.20	132kV KHP - Kilikhar Line	20.72	+	
		Unit- III	14.08	5MVA, 132/11kV TFR	0.31	+	
		Unit- IV	14.20	132kV Motanga - Rangia Line	27.10	+	
		<b>Total</b>	<b>56.65</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.036%</b>		

**Note: Generation-Load Summary (MW) for October 16, 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	885.07	296.52	292.21	544.49	4.31
2	Eastern Grid	379.96	60.61	59.07	363.41	1.54
	<b>Total</b>	<b>1,265.03</b>	<b>357.13</b>	<b>351.28</b>	<b>907.90</b>	<b>5.85</b>

**Note: Generation-Load Summary for October 16, 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	1,023.71	185.32	173.88	765.41	11.44
2	Eastern Grid	462.71	59.21	55.90	476.48	3.31
	<b>Total</b>	<b>1,486.42</b>	<b>244.53</b>	<b>229.78</b>	<b>1,241.89</b>	<b>14.75</b>

**NOTE-BHP,MHPA & Rangia 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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