

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

**Maximum Load/Demand till Date**

<b>Date:</b>	<b>October 20, 2021</b>
<b>Hours:</b>	<b>19:00 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	185.30	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	186.66	400kV THP - Siliguri Line - II	355.75	+	
		Unit- III	186.02	400kV THP - Siliguri Line- IV	340.67	+	
		Unit- IV	184.87	400kV THP - Malbase Line - III	407.40	+	
		Unit- V	184.42	400kV Malbase - Siliguri Line	318.52	+	
		Unit- VI	185.76	-	-	-	
		<b>Total</b>	<b>1,113.03</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.827%</b>		
2	720MW MHP	Unit-I	180.17	400kV MHP - Jigmeling Line - I	328.10	+	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	150.15	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	180.98	400kV MHP - Jigmeling Line - III	329.82	+	
		Unit-IV	150.50	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)	-33.93	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	168.71	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	256.39	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	255.65	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	30.27	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	30.70	+	
		-	-	220kV Tsirang - Jigmeling Line	99.25	+	
-	-	132kV Gelephu - Salakati Line	21.65	+			
<b>Total</b>	<b>661.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.586%</b>				
3	336MW CHP	Unit- I	91.69	220kV CHP - Birpara Line- I	96.82	+	66kV CHP_Gedu line opened at 10:01hrs (08/10/2021) to regulate 66kV voltage.
		Unit- II	90.78	220kV CHP - Birpara Line- II	97.03	+	
		Unit- III	92.14	220kV CHP - Malbase Line- III	124.89	+	
		Unit- IV	91.42	220kV CHP - Semtokha Line- IV	19.14	+	
		-	-	220kV Malbase - Birpara Line	61.60	+	
		-	-	66kV CHP - Chumdo Line	25.73	+	
		-	-	66kV CHP - Gedu Line	0.00		
		-	-	3x3MVA, 66/11kV TFR	1.41	+	
<b>Total</b>	<b>366.03</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.276%</b>				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	87.90	+	66kV BHP-Lobesa line under shutdown.
		Unit- II	12.20	66kV BHP - Lobeysa Line	0.00	+	
		<b>Total</b>	<b>24.50</b>	220kV BHP - Tsirang Line	-22.89	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.55	+	
		Unit- II	21.00	30MVA ICT, 220/66kV (HV)	-23.22	-	
		<b>Total</b>	<b>41.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.967%</b>		
6	126MW DHP	Unit-I	63.62	220kV DHP - Tsirang Line	126.24	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.15	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	3.75	+	
		-	-	5MVA, 220/33kV TFR	0.30	+	
		<b>Total</b>	<b>126.77</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.181%</b>		
7	60MW KHP	Unit- I	16.52	132kV KHP - Nangkhoh Line	38.89	+	
		Unit-II	16.52	132kV KHP - Kilikhar Line	26.17	+	
		Unit- III	16.54	5MVA, 132/11kV TFR	0.40	+	
		Unit- IV	16.49	132kV Motanga - Rangia Line	39.19	+	
		<b>Total</b>	<b>66.07</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.923%</b>		

**Note: Generation-Load Summary (MW) for October 20, 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	1,672.03	302.39	295.05	1,270.39	7.34
2	Eastern Grid	727.87	85.53	81.04	741.59	4.49
	<b>Total</b>	<b>2,399.90</b>	<b>387.92</b>	<b>376.09</b>	<b>2,011.98</b>	<b>11.83</b>

**Note: Generation-Load Summary for October 20, 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	962.00	202.87	195.50	689.35	7.37
2	Eastern Grid	398.14	59.16	55.89	408.76	3.27
	<b>Total</b>	<b>1,360.14</b>	<b>262.03</b>	<b>251.39</b>	<b>1,098.11</b>	<b>10.64</b>

**NOTE-BHP, MHPA, CHP 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 21, 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	185.38	400kV THP - Siliguri Line - I	0.00		400kV THP-Siliguri line I under breakdown.
		Unit- II	186.76	400kV THP - Siliguri Line - II	365.14	+	
		Unit- III	185.48	400kV THP - Siliguri Line- IV	349.59	+	
		Unit- IV	186.19	400kV THP - Malbase Line - III	393.90	+	
		Unit- V	186.54	400kV Malbase - Siliguri Line	331.49	+	
		Unit- VI	186.64	-	-	-	
		<b>Total</b>	<b>1,116.99</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.748%</b>		
2	720MW MHP	Unit-I	130.33	400kV MHP - Jigmeling Line - I	258.70	+	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	130.20	400kV MHP - Jigmeling Line - II	0.00		
		Unit-III	130.55	400kV MHP - Jigmeling Line - III	260.48	+	
		Unit-IV	130.51	400kV MHP - Jigmeling Line - IV	0.00		
		-	-	132kV MHP - Yurmoo Line - I	0.00		
		-	-	132kV MHP - Yurmoo Line - II	0.00		
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-71.92	-	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	144.71		
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	+	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	219.94	+	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	219.94	+	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.30	+	
		-	-	80MVA, 220/132kV ICT - II (HV)	17.54	+	
		-	-	220kV Tsirang - Jigmeling Line	110.97	+	
-	-	132kV Gelephu - Salakati Line	16.70	+			
<b>Total</b>	<b>521.59</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.462%</b>				
3	336MW CHP	Unit- I	91.30	220kV CHP - Birpara Line- I	95.60	+	CHP all Units under Shutdown. 66kV CHP_Gedu line opened at 10:01hrs (08/10/2021) to regulate 66kV voltage.
		Unit- II	91.25	220kV CHP - Birpara Line- II	95.82	+	
		Unit- III	92.01	220kV CHP - Malbase Line- III	132.76	+	
		Unit- IV	91.40	220kV CHP - Semtokha Line- IV	23.19	-	
		-	-	220kV Malbase - Birpara Line	53.40	+	
		-	-	66kV CHP - Chumdo Line	18.13	+	
		-	-	66kV CHP - Gedu Line	0.00		
		-	-	3x3MVA, 66/11kV TFR	0.84	+	
<b>Total</b>	<b>365.96</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.104%</b>				
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	77.00	+	66kV BHP_Lobeysa Line under Shutdown.
		Unit- II	12.20	66kV BHP - Lobeysa Line	0.00	+	
		<b>Total</b>	<b>24.50</b>	220kV BHP - Tsirang Line	-12.03	-	
5	40MW BHP (L/S)	Unit- I	20.70	5MVA, 66/11kV TFR	0.41	+	
		Unit- II	21.00	30MVA ICT, 220/66kV (HV)	-23.67	-	
		<b>Total</b>	<b>41.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.239%</b>		
6	126MW DHP	Unit-I	63.60	220kV DHP - Tsirang Line	126.25	+	220kV DHP_Dagapela Line on standby.
		Unit-II	63.25	220kV DHP - Dagapela Line	0.00		
		-	-	220kV Jigmeling - Dagapela Line	3.14	+	
		-	-	5MVA, 220/33kV TFR		+	
		<b>Total</b>	<b>126.85</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.473%</b>		
7	60MW KHP	Unit- I	16.52	132kV KHP - Nangkhon Line	42.28	+	
		Unit-II	16.48	132kV KHP - Kilikhar Line	22.92	+	
		Unit- III	16.59	5MVA, 132/11kV TFR	0.32	+	
		Unit- IV	16.46	132kV Motanga - Rangia Line	31.71	+	
		<b>Total</b>	<b>66.05</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.802%</b>		

**Note: Generation-Load Summary (MW) for October 21, 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	1,676.00	273.99	267.73	1,291.04	6.26
2	Eastern Grid	587.64	65.61	62.67	633.00	2.94
<b>Total</b>		<b>2,263.64</b>	<b>339.60</b>	<b>330.40</b>	<b>1,924.04</b>	<b>9.20</b>

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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	895.98	180.76	173.20	661.22	7.56
2	Eastern Grid	403.65	44.12	40.11	413.53	4.01
<b>Total</b>		<b>1,299.63</b>	<b>224.88</b>	<b>213.31</b>	<b>1,074.75</b>	<b>11.57</b>

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- 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.