

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

**Coincidental Maximum Load**

**Date:** December 18, 2022  
**Hours:** 18:00 Hours

**Date:** 17-Nov-22      **Time:** 18:39:09hrs      **Load(MW):** 616.55

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Line - I	86.94	Unit-I, II & III under Shutdown. 400kV THP- Siliguri Line II on Standby 400kV Tala-Siliguri line IV under Shutdown
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	61.22	400kV THP - Malbase Line - III	162.53	
		Unit- V	122.58	400kV Malbase - Siliguri Line	65.59	
		Unit- VI	70.62	-	-	
		<b>Total</b>	<b>254.42</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.95%</b>	
2	720MW MHP	Unit-I	99.90	400kV MHP - Jigmeling Line - I	89.06	Unit-III & IV under shutdown. 400kV MHP-JLG Line II, III & IV on Standby. 132kV MHP_Yurmo Line- I not in service. 400kV JLG_ALI line- I (Direct) on Standby. 400kV JLG_ALI Line- I (Interim) on Standby.
		Unit-II	70.25	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	79.17	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	116.34	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	-10.91	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	-17.04	
		-	-	80MVA, 220/132kV ICT - I (HV)	4.29	
		-	-	80MVA, 220/132kV ICT - II (HV)	4.40	
		-	-	220kV Tsirang - Jigmeling Line	-44.73	
-	-	132kV Gelephu - Salakati Line	-13.36			
<b>Total</b>	<b>170.15</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.13%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.00	Unit-I under Shutdown. Unit-II on Standby. 220kV CHP_Birpara Line I & 66kV CHP_GED Line on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-8.93	
		Unit- III	67.80	220kV CHP - Malbase Line- III	27.07	
		Unit- IV	59.81	220kV CHP - Semtokha Line- IV	80.71	
		-	-	220kV Malbase - Birpara Line	-35.41	
		-	-	66kV CHP - Chumdo Line	26.12	
		-	-	66kV CHP - Gedu Line	0.00	
		-	-	3x3MVA, 66/11kV TFR	2.15	
<b>Total</b>	<b>127.61</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.38%</b>			
4	24MW BHP (U/S)	Unit- I	4.40	220kV BHP - Semtokha Line	65.20	
		Unit- II	4.10	66kV BHP - Lobeyasa Line	28.01	
		<b>Total</b>	<b>8.50</b>	220kV BHP - Tsirang Line	-67.99	
5	40MW BHP (L/S)	Unit- I	8.90	5MVA, 66/11kV TFR	0.87	
		Unit- II	8.60	30MVA ICT, 220/66kV (HV)	20.72	
		<b>Total</b>	<b>17.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.35%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	28.54	Unit-I under Shutdown. 220kV DHP_Dagapela Line on Standby.
		Unit-II	28.79	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	63.00	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>28.79</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.17%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	9.97	Unit- I under Shutdown. Unit- III on Standby.
		Unit-II	13.10	132kV KHP - Kilikhar Line	15.18	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.71	
		Unit- IV	13.08	132kV Motanga - Rangia Line	0.00	
		<b>Total</b>	<b>26.18</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.22%</b>	

**Note: Generation-Load Summary (MW) for December 18, 2022 at 18:00hrs.**

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)
1	Western Grid	436.82	373.36	367.96	108.19	5.40
2	Eastern Grid	196.33	192.91	190.67	-41.31	2.24
<b>Total</b>		<b>633.15</b>	<b>566.27</b>	<b>558.63</b>	<b>66.88</b>	<b>7.64</b>

**Note: Generation-Load Summary for December 18, 2021 at 18:00hrs.**

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)
1	Western Grid	454.80	358.51	354.28	128.37	4.23
2	Eastern Grid	172.14	99.86	98.14	40.20	1.72
<b>Total</b>		<b>626.94</b>	<b>458.37</b>	<b>452.42</b>	<b>168.57</b>	<b>5.95</b>

**Note:-BHP data collected from site**

- The Instantaneous load balance,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.

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>December 19, 2022</b>
<b>Hours:</b>	<b>09:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
17-Nov-22	18:39:09hrs	616.55

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Line - I	83.32	Unit-I, II & III under Shutdown. 400kV THP- Siliguri Line II on Standby 400kV Tala-Siliguri line IV under Shutdown
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	0.00	
		Unit- IV	61.22	400kV THP - Malbase Line - III	151.21	
		Unit- V	106.42	400kV Malbase - Siliguri Line	64.11	
		Unit- VI	70.34	-	-	
		<b>Total</b>	<b>237.98</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.45%</b>	
2	720MW MHP	Unit-I	99.83	400kV MHP - Jigmeling Line - I	116.70	Unit-III & IV under shutdown. 400kV MHP-JLG Line II, III & IV on Standby. 132kV MHP_Yurmo Line- I not in service. 400kV JLG_ALI line- I (Direct) on Standby. 400kV JLG_ALI Line- I (Interim) on Standby.
		Unit-II	94.84	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	0.00	400kV MHP - Jigmeling Line - III	0.00	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	76.08	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	107.54	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	2.91	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	6.02	
		-	-	80MVA, 220/132kV ICT - I (HV)	3.25	
		-	-	80MVA, 220/132kV ICT - II (HV)	3.31	
		-	-	220kV Tsirang - Jigmeling Line	-39.64	
-	-	132kV Gelephu - Salakati Line	-11.09			
<b>Total</b>	<b>194.67</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.97%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.00	Unit-I under Shutdown. Unit-II on Standby. 220kV CHP_Birpara Line I & 66kV CHP_GED Line on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-6.42	
		Unit- III	59.79	220kV CHP - Malbase Line- III	34.51	
		Unit- IV	59.78	220kV CHP - Semtokha Line- IV	67.49	
		-	-	220kV Malbase - Birpara Line	-36.65	
		-	-	66kV CHP - Chumdo Line	22.69	
		-	-	66kV CHP - Gedu Line	0.00	
		-	-	3x3MVA, 66/11kV TFR	1.44	
<b>Total</b>	<b>119.57</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.12%</b>			
4	24MW BHP (U/S)	Unit- I	4.08	220kV BHP - Semtokha Line	65.01	
		Unit- II	4.08	66kV BHP - Lobeyasa Line	25.79	
		<b>Total</b>	<b>8.16</b>	220kV BHP - Tsirang Line	-65.42	
5	40MW BHP (L/S)	Unit- I	9.05	5MVA, 66/11kV TFR	0.50	
		Unit- II	8.15	30MVA ICT, 220/66kV (HV)	18.10	
		<b>Total</b>	<b>17.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-2.05%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	28.25	Unit-I under shutdown. 220kV DHP_Dagapela Line on Standby.
		Unit-II	28.51	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	61.88	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>28.51</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.21%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	14.25	Unit-I under Shutdown. Unit-III on Standby.
		Unit-II	14.12	132kV KHP - Kilikhar Line	13.08	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.61	
		Unit- IV	14.10	132kV Motanga - Rangia Line	-3.71	
		<b>Total</b>	<b>28.22</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.99%</b>	

**Note: Generation-Load Summary (MW) for December 19, 2022 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)
1	Western Grid	411.42	346.70	343.85	104.36	2.85
2	Eastern Grid	222.89	189.12	186.95	-5.87	2.17
<b>Total</b>		<b>634.31</b>	<b>535.82</b>	<b>530.80</b>	<b>98.49</b>	<b>5.02</b>

**Note: Generation-Load Summary for December 19, 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)
1	Western Grid	465.86	342.33	339.86	141.44	2.47
2	Eastern Grid	167.45	75.32	73.90	74.22	1.42
<b>Total</b>		<b>633.31</b>	<b>417.65</b>	<b>413.76</b>	<b>215.66</b>	<b>3.89</b>

**Note:- BHP & KHP load collected from site.**

1. The Instantaneous load balance,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.