

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>December 4, 2022</b>
<b>Hours:</b>	<b>18:00 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	0.00	Unit-I, II & III under Shutdown. 400kV Tala-Malbase line under Shutdown. 400kV THP - Siliguri Line - I on Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	167.79	
		Unit- III	0.00	400kV THP - Siliguri Line - IV	161.28	
		Unit- IV	148.42	400kV THP - Malbase Line - III	0.00	
		Unit- V	92.94	400kV Malbase - Siliguri Line	-77.97	
		Unit- VI	89.90	-	-	
		<b>Total</b>	<b>331.26</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.66%</b>	
2	720MW MHP	Unit-I	99.83	400kV MHP - Jigmeling Line - I	0.00	Unit-III & IV under shutdown. 400kV MHP-JLG Line I & II under Shutdown. 400kV MHP-JLG Line III on Standby. 132kV MHP_Yurmo Line-I not in service. 400kV JLG_ALI line- II (Direct) on Standby. 400kV JLG_ALI Line- I (Interim) on Standby.
		Unit-II	99.80	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	109.18	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	86.40	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	114.44	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	-2.18	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	-3.41	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	10.69	
		-	-	80MVA, 220/132kV ICT - II (HV)	10.96	
		-	-	220kV Tsirang - Jigmeling Line	-29.65	
-	-	132kV Gelephu - Salakati Line	0.63			
<b>Total</b>	<b>199.63</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>2.03%</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	-8.05	
		Unit- III	85.09	220kV CHP - Malbase Line- III	50.06	
		Unit- IV	74.44	220kV CHP - Semtokha Line- IV	88.34	
		-	-	220kV Malbase - Birpara Line	-51.01	
		-	-	66kV CHP - Chumdo Line	26.39	
		-	-	66kV CHP - Gedu Line	0.00	
		-	-	3x3MVA, 66/11kV TFR	2.18	
<b>Total</b>	<b>159.53</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.38%</b>			
4	24MW BHP (U/S)	Unit- I	4.90	220kV BHP - Semtokha Line	60.03	
		Unit- II	4.70	66kV BHP - Lobeyasa Line	26.90	
		<b>Total</b>	<b>9.60</b>	220kV BHP - Tsirang Line	-58.10	
5	40MW BHP (L/S)	Unit- I	9.90	5MVA, 66/11kV TFR	0.86	
		Unit- II	10.00	30MVA ICT, 220/66kV (HV)	18.69	
		<b>Total</b>	<b>19.90</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.64%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	32.71	Unit-I on Standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	32.96	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	62.53	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>32.96</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.15%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	11.84	Unit- I under Shutdown. Unit- III on Standby.
		Unit-II	16.02	132kV KHP - Kilikhar Line	19.25	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.61	
		Unit- IV	16.04	132kV Motanga - Rangia Line	6.22	
		<b>Total</b>	<b>32.06</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.12%</b>	

**Note: Generation-Load Summary (MW) for December 04, 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	553.25	390.86	388.20	192.04	2.66
2	Eastern Grid	231.69	200.78	196.37	1.26	4.41
<b>Total</b>		<b>784.94</b>	<b>591.64</b>	<b>584.57</b>	<b>193.30</b>	<b>7.07</b>

**Note: Generation-Load Summary for December 04, 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	588.42	376.99	367.85	223.99	9.14
2	Eastern Grid	206.43	93.75	91.48	100.12	2.27
<b>Total</b>		<b>794.85</b>	<b>470.74</b>	<b>459.33</b>	<b>324.11</b>	<b>11.41</b>

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.

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>December 5, 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	0.00	Unit-I, II & III under Shutdown. 400kV Tala-Malbase line under Shutdown. 400kV THP - Siliguri Line - I on Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	143.91	
		Unit- III	0.00	400kV THP - Siliguri Line - IV	138.81	
		Unit- IV	127.54	400kV THP - Malbase Line - III	0.00	
		Unit- V	69.36	400kV Malbase - Siliguri Line	-70.34	
		Unit- VI	90.17	-	-	
		<b>Total</b>	<b>287.07</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.52%</b>	
2	720MW MHP	Unit-I	94.86	400kV MHP - Jigmeling Line - I	0.00	Unit-III & IV under shutdown. 400kV MHP-JLG Line I & II under Shutdown. 400kV MHP-JLG Line III on Standby. 132kV MHP_Yurmo Line-I not in service. 400kV JLG_ALI line- II (Direct) on Standby. 400kV JLG_ALI Line- I (Interim) on Standby.
		Unit-II	94.81	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	107.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	80.36	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	103.10	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.73	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	1.44	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	8.61	
		-	-	80MVA, 220/132kV ICT - II (HV)	8.79	
		-	-	220kV Tsirang - Jigmeling Line	-24.16	
-	-	132kV Gelephu - Salakati Line	-1.13			
<b>Total</b>	<b>189.67</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.22%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.00	Unit-I under Shutdown. 220kV CHP_Birpara Line I & 66kV CHP_GED Line on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-7.18	
		Unit- III	78.20	220kV CHP - Malbase Line- III	54.57	
		Unit- IV	67.08	220kV CHP - Semtokha Line- IV	74.67	
		-	-	220kV Malbase - Birpara Line	-54.16	
		-	-	66kV CHP - Chumdo Line	22.33	
		-	-	66kV CHP - Gedu Line	0.00	
		-	-	3x3MVA, 66/11kV TFR	0.73	
<b>Total</b>	<b>145.28</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.11%</b>			
4	24MW BHP (U/S)	Unit- I	4.90	220kV BHP - Semtokha Line	58.12	
		Unit- II	4.70	66kV BHP - Lobeysa Line	24.94	
		<b>Total</b>	<b>9.60</b>	220kV BHP - Tsirang Line	-53.36	
5	40MW BHP (L/S)	Unit- I	9.90	5MVA, 66/11kV TFR	0.50	
		Unit- II	10.40	30MVA ICT, 220/66kV (HV)	16.10	
		<b>Total</b>	<b>20.30</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-1.00%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	32.38	Unit-I on Standby. 220kV DHP_Dagapela Line on Standby.
		Unit-II	32.64	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	61.55	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>32.64</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.18%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	13.04	Unit-I under Shutdown. Unit-III on Standby.
		Unit-II	14.08	132kV KHP - Kilikhar Line	14.30	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.55	
		Unit- IV	14.08	132kV Motanga - Rangia Line	0.38	
		<b>Total</b>	<b>28.16</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.96%</b>	

**Note: Generation-Load Summary (MW) for December 05, 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	494.89	368.01	363.74	151.04	4.27
2	Eastern Grid	217.83	192.25	189.67	1.42	2.58
<b>Total</b>		<b>712.72</b>	<b>560.26</b>	<b>553.41</b>	<b>152.46</b>	<b>6.85</b>

**Note: Generation-Load Summary for December 05, 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	570.74	348.18	333.05	220.18	15.13
2	Eastern Grid	208.38	74.44	72.60	136.32	1.84
<b>Total</b>		<b>779.12</b>	<b>422.62</b>	<b>405.65</b>	<b>356.50</b>	<b>16.97</b>

**Note:-**

- 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.