

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

**Coincidental Maximum Load**

**Date:** December 28, 2021  
**Hours:** 18:00 Hours

Date	Time	Load(MW)
23-Dec-21	18:00hrs	479.88

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 Annual Maintenance & Unit-V on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line II on Standby
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	75.68	
		Unit- IV	89.43	400kV THP - Malbase Line - III	169.84	
		Unit- V	0.00	400kV Malbase - Siliguri Line	56.54	
		Unit- VI	159.56	-	-	
		<b>Total</b>	<b>248.99</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.39%</b>	
2	720MW MHP	Unit-I	134.89	400kV MHP - Jigmeling Line - I	133.74	Unit-II & III on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	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	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	109.31	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	8.78	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	14.63	
		-	-	80MVA, 220/132kV ICT - I (HV)	22.42	
		-	-	80MVA, 220/132kV ICT - II (HV)	22.79	
		-	-	220kV Tsirang - Jigmeling Line	-46.43	
-	-	132kV Gelephu - Salakati Line	-10.38			
<b>Total</b>	<b>134.89</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.85%</b>			
3	336MW CHP	Unit- I	63.72	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit IV under Annual Maintenance. 220kV CHP_Birpara Line I on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-4.38	
		Unit- III	61.16	220kV CHP - Malbase Line- III	23.43	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	79.34	
		-	-	220kV Malbase - Birpara Line	-25.71	
		-	-	66kV CHP - Chumdo Line	22.68	
		-	-	66kV CHP - Gedu Line	2.02	
		-	-	3x3MVA, 66/11kV TFR	1.97	
<b>Total</b>	<b>124.88</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.14%</b>			
4	24MW BHP (U/S)	Unit- I	9.10	220kV BHP - Semtokha Line	67.90	U/S unit-II on standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	32.03	
		<b>Total</b>	<b>9.10</b>	220kV BHP - Tsirang Line	-73.06	
5	40MW BHP (L/S)	Unit- I	8.10	5MVA, 66/11kV TFR	0.93	U/S unit-II on standby.
		Unit- II	10.30	30MVA ICT, 220/66kV (HV)	24.01	
		<b>Total</b>	<b>18.40</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-1.09%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	30.08	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	30.98	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.26	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>30.98</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>2.26%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	5.25	Unit I on standby. Unit-IV under Annual Maintenance.
		Unit-II	11.77	132kV KHP - Kilikhar Line	17.21	
		Unit- III	11.77	5MVA, 132/11kV TFR	0.66	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-4.92	
		<b>Total</b>	<b>23.54</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.77%</b>	

**Note: Generation-Load Summary (MW) for December 28, 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	432.35	376.65	372.96	102.13	3.69
2	Eastern Grid	158.43	103.89	102.32	8.11	1.57
<b>Total</b>		<b>590.78</b>	<b>480.54</b>	<b>475.28</b>	<b>110.24</b>	<b>5.26</b>

**Note: Generation-Load Summary for December 28, 2020 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	370.72	267.11	261.20	79.00	5.91
2	Eastern Grid	131.06	63.10	62.68	91.00	0.42
<b>Total</b>		<b>501.78</b>	<b>330.21</b>	<b>323.88</b>	<b>170.00</b>	<b>6.33</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**

**Date:** December 29, 2021  
**Hours:** 09:00 Hours

Date	Time	Load(MW)
23-Dec-21	18:00hrs	479.88

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 Annual Maintenance & Unit-V on standby. 400kV THP-Siliguri line I under breakdown. 400kV THP-Siliguri line II under Standby.
		Unit- II	0.00	400kV THP - Siliguri Line - II	0.00	
		Unit- III	0.00	400kV THP - Siliguri Line- IV	99.18	
		Unit- IV	148.82	400kV THP - Malbase Line - III	195.25	
		Unit- V	0.00	400kV Malbase - Siliguri Line	78.63	
		Unit- VI	148.26	-	-	
		<b>Total</b>	<b>297.08</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.89%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	134.32	Unit- I & II on Standby. Unit-IV under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on standby. 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.36	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	0.00	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	89.26	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	17.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	25.28	
		-	-	80MVA, 220/132kV ICT - I (HV)	19.92	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.19	
		-	-	220kV Tsirang - Jigmeling Line	-33.31	
-	-	132kV Gelephu - Salakati Line	-2.00			
<b>Total</b>	<b>135.36</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.77%</b>			
3	336MW CHP	Unit- I	63.97	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line-I on standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-1.75	
		Unit- III	61.20	220kV CHP - Malbase Line- III	32.14	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	72.44	
		-	-	220kV Malbase - Birpara Line	-27.37	
		-	-	66kV CHP - Chumdo Line	18.95	
		-	-	66kV CHP - Gedu Line	1.91	
		-	-	3x3MVA, 66/11kV TFR	1.80	
<b>Total</b>	<b>125.17</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.26%</b>			
4	24MW BHP (U/S)	Unit- I	9.50	220kV BHP - Semtokha Line	58.20	U/S Unit II standby.
		Unit- II	0.00	66kV BHP - Lobeyasa Line	28.66	
		<b>Total</b>	<b>9.50</b>	220kV BHP - Tsirang Line	-60.23	
5	40MW BHP (L/S)	Unit- I	9.10	5MVA, 66/11kV TFR	0.76	
		Unit- II	9.00	30MVA ICT, 220/66kV (HV)	20.21	
		<b>Total</b>	<b>18.10</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.76%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	30.77	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	30.97	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.80	
		-	-	5MVA, 220/33kV TFR	0.23	
<b>Total</b>	<b>30.97</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.10%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	8.66	Unit I on standby  Unit-IV under Annual Maintenance.
		Unit-II	11.79	132kV KHP - Kilikhar Line	13.96	
		Unit- III	11.87	5MVA, 132/11kV TFR	0.59	
		Unit- IV	0.00	132kV Motanga - Rangia Line	-5.50	
		<b>Total</b>	<b>23.66</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.89%</b>	

**Note: Generation-Load Summary (MW) for December 29, 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	480.82	365.44	362.93	148.69	2.51
2	Eastern Grid	159.02	90.93	89.44	34.78	1.49
<b>Total</b>		<b>639.84</b>	<b>456.37</b>	<b>452.37</b>	<b>183.47</b>	<b>4.00</b>

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1	Western Grid	361.88	217.88	213.01	130.00	4.87
2	Eastern Grid	145.86	55.20	54.15	104.44	1.05
<b>Total</b>		<b>507.74</b>	<b>273.08</b>	<b>267.16</b>	<b>234.44</b>	<b>5.92</b>

**NOTE-BHP and Eastern 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.