

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

**Coincidental Maximum Load**

**Date:** January 30, 2022  
**Hours:** 18:00 Hours

**Date**      **Time**      **Load(MW)**  
 12-Jan-22      18:00hrs      492.25

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	THP under total 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	0.00	400kV THP - Malbase Line - III	0.00	
		Unit- V	0.00	400kV Malbase - Siliguri Line	-54.87	
		Unit- VI	0.00	-	-	
		<b>Total</b>	<b>0.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.00%</b>	
2	720MW MHP	Unit-I	140.44	400kV MHP - Jigmeling Line - I	280.14	Unit-III on Standby. Unit-II under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line I (Interim) under Standby. 400kV JLG_ALI Line II (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	140.81	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)	120.03	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	61.08	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	93.52	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	20.26	
		-	-	80MVA, 220/132kV ICT - II (HV)	20.71	
		-	-	220kV Tsirang - Jigmeling Line	-62.71	
-	-	132kV Gelephu - Salakati Line	-5.68			
<b>Total</b>	<b>281.25</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.39%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.00	Unit-I on Standby. Unit-III under Annual Maintenance. 220kV CHP_Birpara Line I under Shutdown. 220kV CHP_Birpara Line II under Breakdown since 29.12.21. 220kV CHP_Birpara Line under maintenance.
		Unit- II	81.83	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	60.27	
		Unit- IV	84.68	220kV CHP - Semtokha Line- IV	77.44	
		-	-	220kV Malbase - Birpara Line	-25.56	
		-	-	66kV CHP - Chumdo Line	22.16	
		-	-	66kV CHP - Gedu Line	1.62	
		-	-	3x3MVA, 66/11kV TFR	2.03	
<b>Total</b>	<b>166.51</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.80%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	70.70	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	7.20	66kV BHP - Lobeysha Line	27.89	
		<b>Total</b>	<b>7.20</b>	<b>220kV BHP - Tsirang Line</b>	<b>-80.09</b>	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.99	
		Unit- II	12.10	30MVA ICT, 220/66kV (HV)	21.92	
		<b>Total</b>	<b>12.10</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.98%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	23.78	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	24.00	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.48	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>24.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.08%</b>			
7	60MW KHP	Unit- I	15.06	132kV KHP - Nangkhoh Line	9.95	Unit-II under Annual Maintenance. Unit-III on Standby.
		Unit-II	0.00	132kV KHP - Kilikhar Line	19.30	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.61	
		Unit- IV	15.12	132kV Motanga - Rangia Line	9.82	
		<b>Total</b>	<b>30.18</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.06%</b>	

**Note: Generation-Load Summary (MW) for January 30, 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	209.81	352.95	350.13	-80.43	2.82
2	Eastern Grid	311.43	89.98	88.55	158.74	1.43
<b>Total</b>		<b>521.24</b>	<b>442.93</b>	<b>438.68</b>	<b>78.31</b>	<b>4.25</b>

**Note: Generation-Load Summary for January 30, 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	275.16	233.87	233.01	41.29	0.86
2	Eastern Grid	120.34	66.80	61.82	53.54	4.98
<b>Total</b>		<b>395.50</b>	<b>300.67</b>	<b>294.83</b>	<b>94.83</b>	<b>5.84</b>

**NOTE- BHP 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.

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

**Coincidental Maximum Load**

**Date:** January 31, 2022  
**Hours:** 09:00 Hours

**Date**      **Time**      **Load(MW)**  
 12-Jan-22      18:00hrs      492.25

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	THP under total 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	0.00	400kV THP - Malbase Line - III	0.00	
		Unit- V	0.00	400kV Malbase - Siliguri Line	-58.05	
		Unit- VI	0.00	-	-	
		<b>Total</b>	<b>0.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.00%</b>	
2	720MW MHP	Unit-I	104.76	400kV MHP - Jigmeling Line - I	184.30	Unit III on Standby. Unit-II under Annual Maintenance. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line I (Interim) under Standby. 400kV JLG_ALI Line II (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	80.02	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)	88.69	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	34.18	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	55.81	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	18.55	
		-	-	80MVA, 220/132kV ICT - II (HV)	18.69	
		-	-	220kV Tsirang - Jigmeling Line	-35.06	
-	-	132kV Gelephu - Salakati Line	-2.10			
<b>Total</b>	<b>184.78</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.26%</b>			
3	336MW CHP	Unit- I	88.50	220kV CHP - Birpara Line- I	0.00	Unit-II under Breakdown (tripped at 3:02hrs, 30.01.2022). Unit-III under Annual Maintenance. 220kV CHP_Birpara Line I under Shutdown. 220kV CHP_Birpara Line II under Breakdown since 29.12.21. 220kV CHP_Birpara Line under maintenance.
		Unit- II	0.00	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	89.12	
		Unit- IV	88.89	220kV CHP - Semtokha Line- IV	65.29	
		-	-	220kV Malbase - Birpara Line	-16.99	
		-	-	66kV CHP - Chumdo Line	16.98	
		-	-	66kV CHP - Gedu Line	2.65	
		-	-	3x3MVA, 66/11kV TFR	1.61	
<b>Total</b>	<b>177.39</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.98%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	52.50	U/S Unit-I and L/S Unit-I under maintenance.
		Unit- II	7.00	66kV BHP - Lobeysa Line	23.36	
		<b>Total</b>	<b>7.00</b>	220kV BHP - Tsirang Line	-55.94	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.61	
		Unit- II	13.30	30MVA ICT, 220/66kV (HV)	17.12	
		<b>Total</b>	<b>13.30</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-1.13%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	23.46	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	23.66	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.75	
		-	-	5MVA, 220/33kV TFR	0.19	
<b>Total</b>	<b>23.66</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.04%</b>			
7	60MW KHP	Unit- I	15.09	132kV KHP - Nangkhoh Line	11.98	Unit-II under Annual Maintenance. Unit-III on Standby.
		Unit-II	0.00	132kV KHP - Kilikhar Line	17.01	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.90	
		Unit- IV	15.09	132kV Motanga - Rangia Line	9.97	
		<b>Total</b>	<b>30.18</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.96%</b>	

**Note: Generation-Load Summary (MW) for January 31, 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	221.35	331.45	329.93	-75.04	1.52
2	Eastern Grid	214.96	82.04	81.27	97.86	0.77
<b>Total</b>		<b>436.31</b>	<b>413.49</b>	<b>411.20</b>	<b>22.82</b>	<b>2.29</b>

**Note: Generation-Load Summary for January 31, 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	271.93	151.97	144.57	119.96	7.40
2	Eastern Grid	116.39	66.28	65.65	50.11	0.63
<b>Total</b>		<b>388.32</b>	<b>218.25</b>	<b>210.22</b>	<b>170.07</b>	<b>8.03</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.
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