

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>January 22, 2022</b>
<b>Hours:</b>	<b>18:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
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	-61.80	
		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	119.78	400kV MHP - Jigmeling Line - I	243.38	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 II (Interim) under 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	125.61	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)	119.86	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	47.33	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	71.95	
		-	-	80MVA, 220/132kV ICT - I (HV)	23.20	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.56	
		-	-	220kV Tsirang - Jigmeling Line	-57.31	
-	-	132kV Gelephu - Salakati Line	-7.12			
<b>Total</b>	<b>245.39</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.82%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	4.39	Unit-I on Standby. Unit-III under Annual Maintenance 220kV CHP_Birpara Line II under Breakdown since 29.12.21.
		Unit- II	84.05	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	61.23	
		Unit- IV	83.63	220kV CHP - Semtokha Line- IV	75.33	
		-	-	220kV Malbase - Birpara Line	-40.99	
		-	-	66kV CHP - Chumdo Line	22.48	
		-	-	66kV CHP - Gedu Line	1.68	
		-	-	3x3MVA, 66/11kV TFR	1.83	
<b>Total</b>	<b>167.68</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.44%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	71.60	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	8.10	66kV BHP - Lobeyasa Line	28.70	
		<b>Total</b>	<b>8.10</b>	<b>220kV BHP - Tsirang Line</b>	<b>-77.90</b>	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.98	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	15.20	30MVA ICT, 220/66kV (HV)	21.86	
		<b>Total</b>	<b>15.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.34%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	24.77	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	24.99	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.51	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>24.99</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	9.43	Unit-II under Annual Maintenance. Unit III on Standby.
		Unit-II	0.00	132kV KHP - Kilikhar Line	19.68	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.85	
		Unit- IV	15.13	132kV Motanga - Rangia Line	9.61	
		<b>Total</b>	<b>30.19</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.77%</b>	

**Note: Generation-Load Summary (MW) for January 22, 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	215.97	371.68	371.00	-98.40	0.68
2	Eastern Grid	275.58	96.50	94.26	121.77	2.24
<b>Total</b>		<b>491.55</b>	<b>468.18</b>	<b>465.26</b>	<b>23.37</b>	<b>2.92</b>

**Note: Generation-Load Summary for January 22, 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	309.03	277.55	272.07	142.62	5.48
2	Eastern Grid	121.69	63.42	61.32	70.88	2.10
<b>Total</b>		<b>430.72</b>	<b>340.97</b>	<b>333.39</b>	<b>213.50</b>	<b>7.58</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 23, 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	-55.02	
		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	197.88	400kV MHP - Jigmeling Line - I	196.31	Unit-II under Annual Maintenance. Unit III & IV on Standby. 400kV MHP-JLG Line II, III & IV on Standby. 132kV MHP_Yurmo 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)	90.84	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	40.85	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	62.37	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.65	
		-	-	80MVA, 220/132kV ICT - II (HV)	17.95	
		-	-	220kV Tsirang - Jigmeling Line	-39.53	
-	-	132kV Gelephu - Salakati Line	-3.89			
<b>Total</b>	<b>197.88</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.79%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	13.90	Unit-I on Standby. Unit-III under Annual Maintenance. 220kV CHP_Birpara Line II under breakdown.
		Unit- II	82.86	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	70.48	
		Unit- IV	82.12	220kV CHP - Semtokha Line- IV	58.99	
		-	-	220kV Malbase - Birpara Line	-31.82	
		-	-	66kV CHP - Chumdo Line	17.06	
		-	-	66kV CHP - Gedu Line	2.41	
		-	-	3x3MVA, 66/11kV TFR	1.49	
<b>Total</b>	<b>164.98</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.39%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	59.60	U/S Unit-I and L/S Unit-I under maintenance.
		Unit- II	7.80	66kV BHP - Lobeysa Line	24.42	
		<b>Total</b>	<b>7.80</b>	220kV BHP - Tsirang Line	-61.24	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.68	
		Unit- II	15.50	30MVA ICT, 220/66kV (HV)	17.56	
		<b>Total</b>	<b>15.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.69%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	25.47	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	25.67	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.78	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>25.67</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.00%</b>			
7	60MW KHP	Unit- I	15.03	132kV KHP - Nangkhoh Line	12.88	Unit-III on standby. Unit-II under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	16.14	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.85	
		Unit- IV	15.10	132kV Motanga - Rangia Line	7.43	
		<b>Total</b>	<b>30.13</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.87%</b>	

**Note: Generation-Load Summary (MW) for January 23, 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	213.95	326.42	325.93	-72.94	0.49
2	Eastern Grid	228.01	81.72	79.89	106.76	1.83
<b>Total</b>		<b>441.96</b>	<b>408.14</b>	<b>405.82</b>	<b>33.82</b>	<b>2.32</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 (MW)
1	Western Grid	303.46	228.54	228.01	59.91	0.53
2	Eastern Grid	141.44	63.31	62.54	93.14	0.77
<b>Total</b>		<b>444.90</b>	<b>291.85</b>	<b>290.55</b>	<b>153.05</b>	<b>1.30</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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