

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>January 3, 2022</b>
<b>Hours:</b>	<b>18:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
30-Dec-21	18:00hrs	487.76

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	-66.85	
		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	119.88	400kV MHP - Jigmeling Line - I	233.63	Unit-II on Standby. Unit-IV 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) on standby. 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	115.40	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)	114.92	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	46.42	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	69.73	
		-	-	80MVA, 220/132kV ICT - I (HV)	26.23	
		-	-	80MVA, 220/132kV ICT - II (HV)	26.65	
		-	-	220kV Tsirang - Jigmeling Line	-44.88	
-	-	132kV Gelephu - Salakati Line	-4.62			
<b>Total</b>	<b>235.28</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.70%</b>			
3	336MW CHP	Unit- I	91.52	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit IV under Annual Maintenance. 220kV CHP_Birpara Line I & II under breakdown.
		Unit- II	0.00	220kV CHP - Birpara Line- II	0.00	
		Unit- III	91.26	220kV CHP - Malbase Line- III	75.06	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	80.44	
		-	-	220kV Malbase - Birpara Line	-31.12	
		-	-	66kV CHP - Chumdo Line	21.89	
		-	-	66kV CHP - Gedu Line	3.03	
		-	-	3x3MVA, 66/11kV TFR	1.99	
<b>Total</b>	<b>182.78</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.20%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	63.60	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	8.60	66kV BHP - Lobeyasa Line	30.66	
		<b>Total</b>	<b>8.60</b>	<b>220kV BHP - Tsirang Line</b>	<b>-69.21</b>	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.96	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	17.00	30MVA ICT, 220/66kV (HV)	23.00	
		<b>Total</b>	<b>17.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-1.60%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	28.67	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	29.52	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.60	
		-	-	5MVA, 220/33kV TFR	0.80	
<b>Total</b>	<b>29.52</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.17%</b>			
7	60MW KHP	Unit- I	14.98	132kV KHP - Nangkhoh Line	9.44	Unit III on standby. Unit-IV under Annual Maintenance.
		Unit-II	15.01	132kV KHP - Kilikhar Line	19.33	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.88	
		Unit- IV	0.00	132kV Motanga - Rangia Line	7.69	
		<b>Total</b>	<b>29.99</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.13%</b>	

**Note: Generation-Load Summary (MW) for January 03, 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	237.90	380.75	380.74	-97.97	0.01
2	Eastern Grid	265.27	101.17	99.18	119.22	1.99
<b>Total</b>		<b>503.17</b>	<b>481.92</b>	<b>479.92</b>	<b>21.25</b>	<b>2.00</b>

**Note: Generation-Load Summary for January 03, 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	426.05	294.96	284.68	113.09	10.28
2	Eastern Grid	122.95	62.79	53.81	78.16	8.98
<b>Total</b>		<b>549.00</b>	<b>357.75</b>	<b>338.49</b>	<b>191.25</b>	<b>19.26</b>

**NOTE- BHP data 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**

<b>Date:</b>	<b>January 4, 2022</b>
<b>Hours:</b>	<b>09:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
30-Dec-21	18:00hrs	487.76

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	-60.27	
		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	103.23	400kV MHP - Jigmeling Line - I	212.50	Unit-II on Standby. Unit-IV 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) on standby. 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	110.28	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)	96.85	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	44.59	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	68.39	
		-	-	80MVA, 220/132kV ICT - I (HV)	22.84	
		-	-	80MVA, 220/132kV ICT - II (HV)	23.22	
		-	-	220kV Tsirang - Jigmeling Line	-35.75	
-	-	132kV Gelephu - Salakati Line	0.02			
<b>Total</b>	<b>213.51</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.47%</b>			
3	336MW CHP	Unit- I	85.59	220kV CHP - Birpara Line- I	0.00	Unit-II on Standby. Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line-I & II under breakdown..
		Unit- II	0.00	220kV CHP - Birpara Line- II	0.00	
		Unit- III	84.47	220kV CHP - Malbase Line- III	69.10	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	76.92	
		-	-	220kV Malbase - Birpara Line	-25.08	
		-	-	66kV CHP - Chumdo Line	20.39	
		-	-	66kV CHP - Gedu Line	2.07	
		-	-	3x3MVA, 66/11kV TFR	1.66	
<b>Total</b>	<b>170.06</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.05%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	58.60	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	8.70	66kV BHP - Lobeyesa Line	27.68	
		<b>Total</b>	<b>8.70</b>	<b>220kV BHP - Tsirang Line</b>	<b>-61.03</b>	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.67	
		Unit- II	17.20	30MVA ICT, 220/66kV (HV)	19.90	
		<b>Total</b>	<b>17.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.08%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	28.74	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	29.50	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.60	
		-	-	5MVA, 220/33kV TFR	0.76	
<b>Total</b>	<b>29.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.00%</b>			
7	60MW KHP	Unit- I	15.01	132kV KHP - Nangkhoh Line	13.13	Unit III on standby. Unit-IV under Annual Maintenance.
		Unit-II	15.03	132kV KHP - Kilikhar Line	15.89	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.65	
		Unit- IV	0.00	132kV Motanga - Rangia Line	2.60	
		<b>Total</b>	<b>30.04</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.24%</b>	

**Note: Generation-Load Summary (MW) for January 04, 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	225.46	346.56	346.66	-85.35	-0.10
2	Eastern Grid	243.55	92.20	90.82	115.60	1.38
<b>Total</b>		<b>469.01</b>	<b>438.76</b>	<b>437.48</b>	<b>30.25</b>	<b>1.28</b>

**Note: Generation-Load Summary for January 04, 2020 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	304.59	277.00	269.83	5.92	7.17
2	Eastern Grid	134.00	54.31	51.76	101.36	2.55
<b>Total</b>		<b>438.59</b>	<b>331.31</b>	<b>321.59</b>	<b>107.28</b>	<b>9.72</b>

**NOTE-BHP data 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.