

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>January 12, 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	-72.02	
		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	88.86	400kV MHP - Jigmeling Line - I	250.15	Unit-II on Standby. Unit-IV under dry spin. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II on standby 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	163.58	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)	121.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	50.27	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	75.17	
		-	-	80MVA, 220/132kV ICT - I (HV)	26.88	
		-	-	80MVA, 220/132kV ICT - II (HV)	27.34	
		-	-	220kV Tsirang - Jigmeling Line	-50.82	
-	-	132kV Gelephu - Salakati Line	-5.23			
<b>Total</b>	<b>252.44</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.91%</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 & II under breakdown.
		Unit- II	91.38	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	74.23	
		Unit- IV	91.94	220kV CHP - Semtokha Line- IV	81.24	
		-	-	220kV Malbase - Birpara Line	-31.30	
		-	-	66kV CHP - Chumdo Line	22.39	
		-	-	66kV CHP - Gedu Line	2.87	
		-	-	3x3MVA, 66/11kV TFR	1.78	
<b>Total</b>	<b>183.32</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	67.77	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	8.40	66kV BHP - Lobeyasa Line	29.84	
		<b>Total</b>	<b>8.40</b>	<b>220kV BHP - Tsirang Line</b>	<b>-73.59</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	15.70	30MVA ICT, 220/66kV (HV)	23.00	
		<b>Total</b>	<b>15.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-3.65%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	27.25	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	27.50	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.19	
		-	-	5MVA, 220/33kV TFR	0.28	
<b>Total</b>	<b>27.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>-0.11%</b>			
7	60MW KHP	Unit- I	15.10	132kV KHP - Nangkhoh Line	10.32	Unit-III tripped at 16:36hrs(10.01.2021) Unit-IV under Annual Maintenance.
		Unit-II	15.07	132kV KHP - Kilikhar Line	18.71	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.40	
		Unit- IV	0.00	132kV Motanga - Rangia Line	5.46	
		<b>Total</b>	<b>30.17</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>2.45%</b>	

**Note: Generation-Load Summary (MW) for January 12, 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	234.92	389.06	389.16	-103.32	-0.10
2	Eastern Grid	282.61	106.12	103.09	125.67	3.03
<b>Total</b>		<b>517.53</b>	<b>495.18</b>	<b>492.25</b>	<b>22.35</b>	<b>2.93</b>

**Note: Generation-Load Summary for January 12, 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	342.81	250.40	246.73	74.41	3.67
2	Eastern Grid	135.61	69.47	68.51	84.17	0.96
<b>Total</b>		<b>478.42</b>	<b>319.87</b>	<b>315.24</b>	<b>158.58</b>	<b>4.63</b>

**NOTE- All the 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**

<b>Date:</b>	<b>January 13, 2022</b>
<b>Hours:</b>	<b>09:00 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	-69.03	
		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	86.82	400kV MHP - Jigmeling Line - I	234.54	Unit-II on Standby. Unit-IV under dry spin. 400kV MHP-JLG Line II, III & IV on standby. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II on standby 400kV JLG_ALI Line I (Direct) on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	149.48	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)	96.61	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	53.71	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	81.85	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.43	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.78	
		-	-	220kV Tsirang - Jigmeling Line	-37.43	
-	-	132kV Gelephu - Salakati Line	0.92			
<b>Total</b>	<b>236.30</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.74%</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 & II under breakdown..
		Unit- II	83.16	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	70.09	
		Unit- IV	78.90	220kV CHP - Semtokha Line- IV	68.47	
		-	-	220kV Malbase - Birpara Line	-41.93	
		-	-	66kV CHP - Chumdo Line	18.96	
		-	-	66kV CHP - Gedu Line	2.70	
		-	-	3x3MVA, 66/11kV TFR	1.47	
<b>Total</b>	<b>162.06</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.23%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	63.70	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	8.40	66kV BHP - Lobeyasa Line	26.67	
		<b>Total</b>	<b>8.40</b>	<b>220kV BHP - Tsirang Line</b>	<b>-66.03</b>	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.65	
		Unit- II	16.30	30MVA ICT, 220/66kV (HV)	19.01	
		<b>Total</b>	<b>16.30</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-1.17%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	31.76	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	31.98	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.64	
		-	-	5MVA, 220/33kV TFR	0.21	
<b>Total</b>	<b>31.98</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.03%</b>			
7	60MW KHP	Unit- I	16.49	132kV KHP - Nangkhoh Line	15.96	Unit III on standby. Unit-IV under Annual Maintenance.
		Unit-II	16.50	132kV KHP - Kilikhar Line	15.88	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.68	
		Unit- IV	0.00	132kV Motanga - Rangia Line	2.35	
		<b>Total</b>	<b>32.99</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.44%</b>	

**Note: Generation-Load Summary (MW) for January 13, 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	218.74	367.13	367.04	-110.96	0.09
2	Eastern Grid	269.29	93.03	90.80	138.83	2.23
<b>Total</b>		<b>488.03</b>	<b>460.16</b>	<b>457.84</b>	<b>27.87</b>	<b>2.32</b>

**Note: Generation-Load Summary for January 13, 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	346.20	239.46	233.11	93.10	6.35
2	Eastern Grid	146.05	61.92	61.49	97.77	0.43
<b>Total</b>		<b>492.25</b>	<b>301.38</b>	<b>294.60</b>	<b>190.87</b>	<b>6.78</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.

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