

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>January 5, 2023</b>
<b>Hours:</b>	<b>18:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
28-Dec-22	18:03:26hrs	629.23

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	68.80	Unit-I, II & III under Shutdown. Unit-IV on Standby. 400kV THP- Siliguri Line II on Standby 400kV Tala-Siliguri line IV under 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	145.97	
		Unit- V	118.26	400kV Malbase - Siliguri Line	47.79	
		Unit- VI	98.94	-	-	
		<b>Total</b>	<b>217.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.12%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	87.40	Unit-I under Breakdown. Unit-III & IV under Shutdown. 400kV MHP-JLG Line II, III & IV on Standby. 132kV MHP_Yurmo Line-I not in service. 400kV JLG_ALI line- I (Direct) on Standby. 400kV JLG_ALI Line- I (Interim) on Standby.
		Unit-II	174.80	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	85.90	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	123.40	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	-13.09	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	-21.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	6.20	
		-	-	80MVA, 220/132kV ICT - II (HV)	6.30	
		-	-	220kV Tsirang - Jigmeling Line	-46.55	
-	-	132kV Gelephu - Salakati Line	-13.01			
<b>Total</b>	<b>174.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.86%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.00	Unit-I on Standby. Unit-II under Shutdown. 220kV CHP_Birpara Line I on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-8.17	
		Unit- III	71.27	220kV CHP - Malbase Line- III	28.00	
		Unit- IV	68.51	220kV CHP - Semtokha Line- IV	87.74	
		-	-	220kV Malbase - Birpara Line	-34.60	
		-	-	66kV CHP - Chumdo Line	25.38	
		-	-	66kV CHP - Gedu Line	4.90	
		-	-	3x3MVA, 66/11kV TFR	1.10	
<b>Total</b>	<b>139.78</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.59%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	60.80	L/S & U/S Unit-I on Standby.
		Unit- II	7.50	66kV BHP - Lobeyasa Line	26.99	
		<b>Total</b>	<b>7.50</b>	<b>220kV BHP - Tsirang Line</b>	<b>-66.87</b>	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.90	L/S & U/S Unit-I on Standby.
		Unit- II	14.50	30MVA ICT, 220/66kV (HV)	20.60	
		<b>Total</b>	<b>14.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.82%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	24.35	Unit-I under Shutdown. 220kV DHP_Dagapela Line on Standby.
		Unit-II	24.62	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	63.10	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>24.62</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.28%</b>			
7	60MW KHP	Unit- I	14.96	132kV KHP - Nangkhoh Line	10.02	Unit-III under Shutdown. Unit-IV on Standby.
		Unit-II	14.95	132kV KHP - Kilikhar Line	18.07	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.90	
		Unit- IV	0.00	132kV Motanga - Rangia Line	0.00	
		<b>Total</b>	<b>29.91</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>3.08%</b>	

**Note: Generation-Load Summary (MW) for January 05, 2023 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	403.60	376.33	372.82	73.82	3.51
2	Eastern Grid	204.71	205.26	202.84	-47.10	2.42
<b>Total</b>		<b>608.31</b>	<b>581.59</b>	<b>575.66</b>	<b>26.72</b>	<b>5.93</b>

**Note: Generation-Load Summary for January 05, 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	224.41	354.31	354.53	-88.05	-0.22
2	Eastern Grid	262.04	106.94	104.87	113.25	2.07
<b>Total</b>		<b>486.45</b>	<b>461.25</b>	<b>459.40</b>	<b>25.20</b>	<b>1.85</b>

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 6, 2023</b>
<b>Hours:</b>	<b>09:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
28-Dec-22	18:03:26hrs	629.23

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	72.29	Unit-I, II & III under Shutdown. Unit-IV on Standby. 400kV THP- Siliguri Line II on Standby 400kV Tala-Siliguri line IV under 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	148.44	
		Unit- V	107.81	400kV Malbase - Siliguri Line	51.85	
		Unit- VI	119.69	-	-	
		<b>Total</b>	<b>227.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>2.98%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	78.76	Unit-I under Breakdown. Unit-III & IV under Shutdown. 400kV MHP-JLG Line II, III & IV on Standby. 132kV MHP_Yurmo Line-I not in service. 400kV JLG_ALI line- I (Direct) on Standby. 400kV JLG_ALI Line- I (Interim) on Standby.
		Unit-II	159.90	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	79.76	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	113.24	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	-13.09	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	-20.47	
		-	-	80MVA, 220/132kV ICT - I (HV)	5.27	
		-	-	80MVA, 220/132kV ICT - II (HV)	5.41	
		-	-	220kV Tsirang - Jigmeling Line	-41.24	
-	-	132kV Gelephu - Salakati Line	-10.95			
<b>Total</b>	<b>159.90</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.86%</b>			
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Line- I	0.00	Unit-I on Standby. Unit-II under Shutdown. 220kV CHP_Birpara Line I on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-9.28	
		Unit- III	63.58	220kV CHP - Malbase Line- III	24.09	
		Unit- IV	57.67	220kV CHP - Semtokha Line- IV	76.84	
		-	-	220kV Malbase - Birpara Line	-34.06	
		-	-	66kV CHP - Chumdo Line	22.10	
		-	-	66kV CHP - Gedu Line	5.95	
		-	-	3x3MVA, 66/11kV TFR	0.79	
<b>Total</b>	<b>121.25</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.63%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	59.86	L/S & U/S unit-I on Standby
		Unit- II	7.20	66kV BHP - Lobeyasa Line	24.78	
		<b>Total</b>	<b>7.20</b>	<b>220kV BHP - Tsirang Line</b>	<b>-62.67</b>	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.67	L/S & U/S unit-I on Standby
		Unit- II	15.30	30MVA ICT, 220/66kV (HV)	18.40	
		<b>Total</b>	<b>15.30</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.62%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	24.15	Unit-I under Shutdown. 220kV DHP_Dagapela Line on Standby.
		Unit-II	24.41	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	62.07	
		-	-	5MVA, 220/33kV TFR	0.25	
<b>Total</b>	<b>24.41</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.04%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhor Line	12.85	Unit-III under Shutdown. Unit-I on Standby.
		Unit-II	15.06	132kV KHP - Kilikhar Line	16.18	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.83	
		Unit- IV	15.05	132kV Motanga - Rangia Line	4.99	
		<b>Total</b>	<b>30.11</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.83%</b>	

**Note: Generation-Load Summary (MW) for January 06, 2023 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	395.66	356.10	348.70	80.80	7.40
2	Eastern Grid	190.01	188.29	186.66	-39.52	1.63
<b>Total</b>		<b>585.67</b>	<b>544.39</b>	<b>535.36</b>	<b>41.28</b>	<b>9.03</b>

**Note: Generation-Load Summary for January 06, 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	224.23	344.73	344.63	-87.60	0.10
2	Eastern Grid	235.37	84.97	83.47	117.50	1.50
<b>Total</b>		<b>459.60</b>	<b>429.70</b>	<b>428.10</b>	<b>29.90</b>	<b>1.60</b>

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.