

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>January 6, 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	-73.38	
		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	124.96	400kV MHP - Jigmeling Line - I	253.04	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	130.37	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)	113.09	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	52.69	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	79.71	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.38	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.81	
		-	-	220kV Tsirang - Jigmeling Line	-53.54	
-	-	132kV Gelephu - Salakati Line	-0.77			
<b>Total</b>	<b>255.33</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.90%</b>			
3	336MW CHP	Unit- I	71.30	220kV CHP - Birpara Line- I	0.00	Unit-III on Standby. Unit IV under Annual Maintenance. 220kV CHP_Birpara Line I & II under breakdown.
		Unit- II	78.74	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	52.82	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	70.74	
		-	-	220kV Malbase - Birpara Line	-38.32	
		-	-	66kV CHP - Chumdo Line	21.37	
		-	-	66kV CHP - Gedu Line	2.03	
		-	-	3x3MVA, 66/11kV TFR	-	
<b>Total</b>	<b>150.04</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>2.05%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	72.90	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	8.70	66kV BHP - Lobeyasa Line	29.54	
		<b>Total</b>	<b>8.70</b>	<b>220kV BHP - Tsirang Line</b>	<b>-77.60</b>	
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	1.01	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	17.00	30MVA ICT, 220/66kV (HV)	22.12	
		<b>Total</b>	<b>17.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.58%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	28.18	Unit-I under Annual Maintenance. 220kV DHP-Dagapela Line on standby.
		Unit-II	29.09	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	16.52	
		-	-	5MVA, 220/33kV TFR	0.90	
<b>Total</b>	<b>29.09</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.03%</b>			
7	60MW KHP	Unit- I	15.04	132kV KHP - Nangkhoh Line	10.46	Unit II on standby. Unit-IV under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Line	18.51	
		Unit- III	15.11	5MVA, 132/11kV TFR	0.50	
		Unit- IV	0.00	132kV Motanga - Rangia Line	4.25	
		<b>Total</b>	<b>30.15</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>2.26%</b>	

**Note: Generation-Load Summary (MW) for January 06, 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	204.83	370.07	367.13	-111.70	2.94
2	Eastern Grid	285.48	96.06	93.09	135.88	2.97
<b>Total</b>		<b>490.31</b>	<b>466.13</b>	<b>460.22</b>	<b>24.18</b>	<b>5.91</b>

**Note: Generation-Load Summary for January 06, 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	416.17	264.67	262.20	136.13	2.47
2	Eastern Grid	135.75	55.01	54.60	96.11	0.41
<b>Total</b>		<b>551.92</b>	<b>319.68</b>	<b>316.80</b>	<b>232.24</b>	<b>2.88</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 7, 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	-62.62	
		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	129.83	400kV MHP - Jigmeling Line - I	218.98	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	90.33	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)	90.32	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	50.06	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	76.31	
		-	-	80MVA, 220/132kV ICT - I (HV)	19.30	
		-	-	80MVA, 220/132kV ICT - II (HV)	19.65	
		-	-	220kV Tsirang - Jigmeling Line	-35.19	
-	-	132kV Gelephu - Salakati Line	2.16			
<b>Total</b>	<b>220.16</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.54%</b>			
3	336MW CHP	Unit- I	90.31	220kV CHP - Birpara Line- I	0.00	Unit-III on Standby. Unit-IV under Annual Maintenance. 220kV CHP_Birpara Line-I & II under breakdown..
		Unit- II	90.05	220kV CHP - Birpara Line- II	0.00	
		Unit- III	0.00	220kV CHP - Malbase Line- III	86.66	
		Unit- IV	0.00	220kV CHP - Semtokha Line- IV	70.05	
		-	-	220kV Malbase - Birpara Line	-28.68	
		-	-	66kV CHP - Chumdo Line	18.72	
		-	-	66kV CHP - Gedu Line	3.09	
		-	-	3x3MVA, 66/11kV TFR	1.77	
<b>Total</b>	<b>180.36</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.04%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	59.30	U/S unit-I and L/S Unit-I under maintenance.
		Unit- II	8.60	66kV BHP - Lobeyasa Line	26.49	
<b>Total</b>	<b>8.60</b>	<b>220kV BHP - Tsirang Line</b>	<b>-60.83</b>			
5	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.62	
		Unit- II	17.00	30MVA ICT, 220/66kV (HV)	18.75	
<b>Total</b>	<b>17.00</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	28.29	Unit-I under Annual Maintenance. 220kV DHP_Dagapela Line on standby.
		Unit-II	29.08	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	15.58	
		-	-	5MVA, 220/33kV TFR	0.70	
<b>Total</b>	<b>29.08</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.31%</b>			
7	60MW KHP	Unit- I	15.02	132kV KHP - Nangkhoh Line	13.72	Unit III on standby. Unit-IV under Annual Maintenance.
		Unit-II	15.08	132kV KHP - Kilikhar Line	15.23	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.70	
		Unit- IV	0.00	132kV Motanga - Rangia Line	4.94	
		<b>Total</b>	<b>30.10</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.50%</b>	

**Note: Generation-Load Summary (MW) for January 07, 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	235.04	361.53	361.35	-91.30	0.18
2	Eastern Grid	250.26	81.60	79.97	133.47	1.63
<b>Total</b>		<b>485.30</b>	<b>443.13</b>	<b>441.32</b>	<b>42.17</b>	<b>1.81</b>

**Note: Generation-Load Summary for January 07, 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	371.99	240.68	233.56	120.61	7.12
2	Eastern Grid	136.54	46.03	45.68	101.21	0.35
<b>Total</b>		<b>508.53</b>	<b>286.71</b>	<b>279.24</b>	<b>221.82</b>	<b>7.47</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.
- This report is generated to give an idea of the generation & load flow for the system at a particular instant.