

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

**Coincidental Maximum Load**

<b>Date:</b>	<b>December 29, 2022</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	79.78	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	172.71	
		Unit- V	142.71	400kV Malbase - Siliguri Line	53.69	
		Unit- VI	110.00	-	-	
		<b>Total</b>	<b>252.71</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.09%</b>	
2	720MW MHP	Unit-I	79.78	400kV MHP - Jigmeling Line - I	70.64	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	79.77	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	87.27	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	122.80	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	-20.36	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	-31.40	
		-	-	80MVA, 220/132kV ICT - I (HV)	10.00	
		-	-	80MVA, 220/132kV ICT - II (HV)	10.00	
		-	-	220kV Tsirang - Jigmeling Line	-39.71	
-	-	132kV Gelephu - Salakati Line	-7.06			
<b>Total</b>	<b>159.55</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.03%</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 & 66kV CHP_GED Line on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-12.84	
		Unit- III	69.26	220kV CHP - Malbase Line- III	20.27	
		Unit- IV	69.86	220kV CHP - Semtokha Line- IV	99.45	
		-	-	220kV Malbase - Birpara Line	-36.53	
		-	-	66kV CHP - Chumdo Line	29.51	
		-	-	66kV CHP - Gedu Line	0.00	
		-	-	3x3MVA, 66/11kV TFR	2.20	
<b>Total</b>	<b>139.12</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.38%</b>			
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Line	56.03	BHP(U/S) Unit-I on Standby.
		Unit- II	7.64	66kV BHP - Lobeyasa Line	27.77	
		<b>Total</b>	<b>7.64</b>	<b>220kV BHP - Tsirang Line</b>	<b>-61.49</b>	
5	40MW BHP (L/S)	Unit- I	7.76	5MVA, 66/11kV TFR	0.70	
		Unit- II	7.68	30MVA ICT, 220/66kV (HV)	21.00	
		<b>Total</b>	<b>15.44</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.30%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	26.34	Unit-I under Shutdown. 220kV DHP_Dagapela Line on Standby.
		Unit-II	26.60	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	63.50	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>26.60</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.23%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	9.38	Unit-III under Shutdown. Unit-I on Standby.
		Unit-II	14.05	132kV KHP - Kilikhar Line	17.63	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.98	
		Unit- IV	14.07	132kV Motanga - Rangia Line	0.00	
		<b>Total</b>	<b>28.12</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.46%</b>	

**Note: Generation-Load Summary (MW) for December 29, 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	441.51	397.12	396.24	84.10	0.88
2	Eastern Grid	187.67	206.78	205.01	-58.82	1.77
<b>Total</b>		<b>629.18</b>	<b>603.90</b>	<b>601.25</b>	<b>25.28</b>	<b>2.65</b>

**Note: Generation-Load Summary for December 29, 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	565.50	382.59	381.01	210.44	1.58
2	Eastern Grid	157.02	102.85	101.43	26.64	1.42
<b>Total</b>		<b>722.52</b>	<b>485.44</b>	<b>482.44</b>	<b>237.08</b>	<b>3.00</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**

**Date:** December 30, 2022  
**Hours:** 09:00 Hours

**Date**      **Time**      **Load(MW)**  
 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	63.18	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	162.59	
		Unit- V	128.79	400kV Malbase - Siliguri Line	37.63	
		Unit- VI	99.92	-	-	
		<b>Total</b>	<b>228.71</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.29%</b>	
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Line - I	80.85	Unit I tripped at 01:09hrs. 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	169.72	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	87.09	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	117.90	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	-13.82	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	-22.49	
		-	-	80MVA, 220/132kV ICT - I (HV)	13.20	
		-	-	80MVA, 220/132kV ICT - II (HV)	13.20	
		-	-	220kV Tsirang - Jigmeling Line	-29.17	
-	-	132kV Gelephu - Salakati Line	5.46			
<b>Total</b>	<b>169.72</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.05%</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 & 66kV CHP_GED Line on Standby.
		Unit- II	0.00	220kV CHP - Birpara Line- II	-5.71	
		Unit- III	65.69	220kV CHP - Malbase Line- III	20.14	
		Unit- IV	64.69	220kV CHP - Semtokha Line- IV	88.54	
		-	-	220kV Malbase - Birpara Line	-24.19	
		-	-	66kV CHP - Chumdo Line	25.65	
		-	-	66kV CHP - Gedu Line	0.00	
		-	-	3x3MVA, 66/11kV TFR	1.70	
<b>Total</b>	<b>130.38</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	50.54	U/S unit-I on Standby
		Unit- II	7.69	66kV BHP - Lobeyasa Line	25.18	
		<b>Total</b>	<b>7.69</b>	220kV BHP - Tsirang Line	-52.74	
5	40MW BHP (L/S)	Unit- I	7.82	5MVA, 66/11kV TFR	0.60	U/S unit-I on Standby
		Unit- II	7.90	30MVA ICT, 220/66kV (HV)	18.10	
		<b>Total</b>	<b>15.72</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.73%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	26.03	Unit-I under Shutdown. 220kV DHP_Dagapela Line on Standby.
		Unit-II	26.31	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	62.30	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>26.31</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.30%</b>			
7	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhoh Line	4.49	Unit-III under Shutdown. Unit-I on Standby.
		Unit-II	10.07	132kV KHP - Kilikhar Line	14.72	
		Unit- III	0.00	5MVA, 132/11kV TFR	0.90	
		Unit- IV	10.09	132kV Motanga - Rangia Line	3.25	
		<b>Total</b>	<b>20.16</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.25%</b>	

**Note: Generation-Load Summary (MW) for December 30, 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	408.81	367.07	364.16	70.91	2.91
2	Eastern Grid	189.88	188.31	186.48	-27.60	1.83
<b>Total</b>		<b>598.69</b>	<b>555.38</b>	<b>550.64</b>	<b>43.31</b>	<b>4.74</b>

**Note: Generation-Load Summary for December 30, 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	516.23	368.22	365.98	171.70	2.24
2	Eastern Grid	164.70	94.04	92.38	46.97	1.66
<b>Total</b>		<b>680.93</b>	<b>462.26</b>	<b>458.36</b>	<b>218.67</b>	<b>3.90</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.

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