

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

**Coincidental Maximum Load**

**Date:** October 19, 2022  
**Hours:** 19:00 Hours

**Date:** 30-Aug-22      **Time:** 19:23 hrs      **Load(MW):** 536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	169.05	400kV THP - Siliguri Line - I	167.74	THP Unit VI on breakdown.
		Unit- II	166.42	400kV THP - Siliguri Line - II	166.14	
		Unit- III	167.37	400kV THP - Siliguri Line - IV	161.15	
		Unit- IV	138.71	400kV THP - Malbase Line - III	238.36	
		Unit- V	98.25	400kV Malbase - Siliguri Line	143.58	
		Unit- VI	0.00	-	-	
		<b>Total</b>	<b>739.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.87%</b>	
2	720MW MHP	Unit-I	110.02	400kV MHP - Jigmeling Line - I	138.39	MHP unit-II on Standby. 400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	120.51	400kV MHP - Jigmeling Line - III	139.34	
		Unit-IV	121.11	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	71.41	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	26.16	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	62.47	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	93.44	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	94.59	
		-	-	80MVA, 220/132kV ICT - I (HV)	17.48	
		-	-	80MVA, 220/132kV ICT - II (HV)	17.78	
		-	-	220kV Tsirang - Jigmeling Line	-22.95	
-	-	132kV Gelephu - Salakati Line	16.27			
<b>Total</b>	<b>351.64</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.71%</b>			
3	336MW CHP	Unit- I	89.88	220kV CHP - Birpara Line- I	55.98	
		Unit- II	83.77	220kV CHP - Birpara Line- II	55.67	
		Unit- III	90.03	220kV CHP - Malbase Line- III	100.43	
		Unit- IV	61.50	220kV CHP - Semtokha Line- IV	98.33	
		-	-	220kV Malbase - Birpara Line	13.52	
		-	-	66kV CHP - Chumdo Line	0.00	
		-	-	66kV CHP - Gedu Line	12.70	
		-	-	3x3MVA, 66/11kV TFR	1.34	
<b>Total</b>	<b>325.18</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.22%</b>			
4	24MW BHP (U/S)	Unit- I	9.20	220kV BHP - Semtokha Line	42.68	
		Unit- II	9.20	66kV BHP - Lobeyasa Line	28.35	
		<b>Total</b>	<b>18.40</b>	220kV BHP - Tsirang Line	-20.07	
5	40MW BHP (L/S)	Unit- I	16.48	5MVA, 66/11kV TFR	0.61	
		Unit- II	16.40	30MVA ICT, 220/66kV (HV)	10.50	
		<b>Total</b>	<b>32.88</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.57%</b>	
6	126MW DHP	Unit-I	32.28	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	32.03	220kV DHP - Dagapela Line	63.92	
		-	-	220kV Jigmeling - Dagapela Line	-32.25	
		-	-	5MVA, 220/33kV TFR	0.25	
<b>Total</b>	<b>64.31</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.22%</b>			
7	60MW KHP	Unit- I	15.74	132kV KHP - Nangkhor Line	35.57	
		Unit-II	15.77	132kV KHP - Kilikhar Line	26.18	
		Unit- III	15.75	5MVA, 132/11kV TFR	0.68	
		Unit- IV	15.70	132kV Motanga - Rangia Line	42.90	
		<b>Total</b>	<b>62.96</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.84%</b>	

**Note: Generation-Load Summary (MW) for October 19, 2022 at 19:00hrs.**

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	1,180.57	407.49	400.50	763.78	6.99
2	Eastern Grid	414.60	114.23	111.20	309.67	3.03
<b>Total</b>		<b>1,595.17</b>	<b>521.72</b>	<b>511.70</b>	<b>1,073.45</b>	<b>10.02</b>

**Note: Generation-Load Summary for October 19, 2021 at 19:00hrs.**

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	1,382.88	300.29	296.23	1,029.33	4.06
2	Eastern Grid	854.36	88.65	83.36	818.97	5.29
<b>Total</b>		<b>2,237.24</b>	<b>388.94</b>	<b>379.59</b>	<b>1,848.30</b>	<b>9.35</b>

**NOTE-MAT 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.

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

**Coincidental Maximum Load**

**Date:** October 20, 2022  
**Hours:** 09:00 Hours

**Date:** 30-Aug-22      **Time:** 19:23 hrs      **Load(MW):** 536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	169.07	400kV THP - Siliguri Line - I	149.15	Unit-VI under breakdown.
		Unit- II	169.70	400kV THP - Siliguri Line - II	147.00	
		Unit- III	109.80	400kV THP - Siliguri Line- IV	142.00	
		Unit- IV	100.80	400kV THP - Malbase Line - III	196.00	
		Unit- V	99.10	400kV Malbase - Siliguri Line	130.18	
		Unit- VI	0.00	-	-	
		<b>Total</b>	<b>648.47</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>2.21%</b>	
2	720MW MHP	Unit-I	109.90	400kV MHP - Jigmeling Line - I	147.82	MHP Unit- II standby.400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	0.00	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	120.34	400kV MHP - Jigmeling Line - III	148.71	
		Unit-IV	120.49	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	52.06	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	3.60	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	73.29	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	109.88	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	110.75	
		-	-	80MVA, 220/132kV ICT - I (HV)	12.20	
		-	-	80MVA, 220/132kV ICT - II (HV)	12.50	
		-	-	220kV Tsirang - Jigmeling Line	-10.40	
-	-	132kV Gelephu - Salakati Line	16.57			
<b>Total</b>	<b>350.73</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.61%</b>			
3	336MW CHP	Unit- I	89.29	220kV CHP - Birpara Line- I	56.63	
		Unit- II	85.23	220kV CHP - Birpara Line- II	56.43	
		Unit- III	88.87	220kV CHP - Malbase Line- III	108.83	
		Unit- IV	61.80	220kV CHP - Semtokha Line- IV	90.26	
		-	-	220kV Malbase - Birpara Line	9.28	
		-	-	66kV CHP - Chumdo Line	0.00	
		-	-	66kV CHP - Gedu Line	11.20	
		-	-	3x3MVA, 66/11kV TFR	0.90	
<b>Total</b>	<b>325.19</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.29%</b>			
4	24MW BHP (U/S)	Unit- I	9.50	220kV BHP - Semtokha Line	35.50	
		Unit- II	9.20	66kV BHP - Lobeysa Line	25.42	
		<b>Total</b>	<b>18.70</b>	220kV BHP - Tsirang Line	-9.00	
5	40MW BHP (L/S)	Unit- I	17.10	5MVA, 66/11kV TFR	0.50	
		Unit- II	17.10	30MVA ICT, 220/66kV (HV)	7.62	
		<b>Total</b>	<b>34.20</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.91%</b>	
6	126MW DHP	Unit-I	30.30	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	33.02	220kV DHP - Dagapela Line	62.91	
		-	-	220kV Jigmeling - Dagapela Line	-31.70	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>63.32</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.33%</b>			
7	60MW KHP	Unit- I	14.50	132kV KHP - Nangkhoh Line	35.23	
		Unit-II	14.50	132kV KHP - Kilikhar Line	20.75	
		Unit- III	14.50	5MVA, 132/11kV TFR	0.43	
		Unit- IV	14.50	132kV Motanga - Rangia Line	32.60	
		<b>Total</b>	<b>58.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>2.74%</b>	

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1	Western Grid	1,089.88	377.91	361.96	690.67	15.95
2	Eastern Grid	408.73	86.94	83.21	343.09	3.73
<b>Total</b>		<b>1,498.61</b>	<b>464.85</b>	<b>445.17</b>	<b>1,033.76</b>	<b>19.68</b>

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1	Western Grid	1,305.56	271.94	268.57	989.99	3.37
2	Eastern Grid	854.76	79.29	74.53	819.10	4.76
<b>Total</b>		<b>2,160.32</b>	<b>351.23</b>	<b>343.10</b>	<b>1,809.09</b>	<b>8.13</b>

**Note: All WDC Load, DHP & MAT 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.
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