

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

**Coincidental Maximum Load**

**Date:** October 22, 2022  
**Hours:** 19:00 Hours

**Date**      **Time**      **Load(MW)**  
 22-Oct-22      18:39hrs      564.39

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	126.89	THP Unit- IV on Standby. Unit-I under breakdown.
		Unit- II	158.68	400kV THP - Siliguri Line - II	126.03	
		Unit- III	157.88	400kV THP - Siliguri Line- IV	123.50	
		Unit- IV	0.00	400kV THP - Malbase Line - III	201.77	
		Unit- V	117.64	400kV Malbase - Siliguri Line	105.47	
		Unit- VI	148.69	-	-	
		<b>Total</b>	<b>582.89</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.81%</b>	
2	720MW MHP	Unit-I	100.18	400kV MHP - Jigmeling Line - I	112.41	MHP unit-IV on Standby. 400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmo line I not in service. 400kV JLG_ALI Direct line II standby. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	100.13	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	100.62	400kV MHP - Jigmeling Line - III	113.09	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	72.52	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	59.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	65.64	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	99.07	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	14.40	
		-	-	80MVA, 220/132kV ICT - II (HV)	14.70	
		-	-	220kV Tsirang - Jigmeling Line	31.30	
-	-	132kV Gelephu - Salakati Line	9.63			
<b>Total</b>	<b>300.93</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.97%</b>			
3	336MW CHP	Unit- I	79.91	220kV CHP - Birpara Line- I	47.74	66kV CHP-Chumdo Line under Shutdown.
		Unit- II	76.84	220kV CHP - Birpara Line- II	47.55	
		Unit- III	74.94	220kV CHP - Malbase Line- III	82.49	
		Unit- IV	60.77	220kV CHP - Semtokha Line- IV	100.95	
		-	-	220kV Malbase - Birpara Line	14.54	
		-	-	66kV CHP - Chumdo Line	0.00	
		-	-	66kV CHP - Gedu Line	11.78	
		-	-	3x3MVA, 66/11kV TFR	1.20	
<b>Total</b>	<b>292.46</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.26%</b>			
4	24MW BHP (U/S)	Unit- I	8.90	220kV BHP - Semtokha Line	46.30	
		Unit- II	8.60	66kV BHP - Lobeyasa Line	28.05	
		<b>Total</b>	<b>17.50</b>	220kV BHP - Tsirang Line	-25.68	
5	40MW BHP (L/S)	Unit- I	16.00	5MVA, 66/11kV TFR	0.58	
		Unit- II	16.00	30MVA ICT, 220/66kV (HV)	11.44	
		<b>Total</b>	<b>32.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.51%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	59.69	Unit-I standby. 220kV DHP_DAG Line on Standby.
		Unit-II	60.02	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	62.20	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>60.02</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.22%</b>			
7	60MW KHP	Unit- I	14.07	132kV KHP - Nangkhon Line	30.70	
		Unit-II	14.06	132kV KHP - Kilikhar Line	24.44	
		Unit- III	14.18	5MVA, 132/11kV TFR	0.60	
		Unit- IV	14.06	132kV Motanga - Rangia Line	28.64	
		<b>Total</b>	<b>56.37</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.12%</b>	

**Note: Generation-Load Summary (MW) for October 22, 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	984.87	424.05	418.22	591.72	5.83
2	Eastern Grid	357.30	123.42	119.88	202.98	3.54
<b>Total</b>		<b>1,342.17</b>	<b>547.47</b>	<b>538.10</b>	<b>794.70</b>	<b>9.37</b>

**Note: Generation-Load Summary for October 22, 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	1,670.67	292.83	287.09	1,279.17	5.74
2	Eastern Grid	481.83	70.74	67.82	509.76	2.92
<b>Total</b>		<b>2,152.50</b>	<b>363.57</b>	<b>354.91</b>	<b>1,788.93</b>	<b>8.66</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**

<b>Date:</b>	<b>October 23, 2022</b>
<b>Hours:</b>	<b>09:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
22-Oct-22	18:39hrs	564.39

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	130.63	Unit-I under breakdown. Unit-IV on standby.
		Unit- II	158.94	400kV THP - Siliguri Line - II	130.53	
		Unit- III	158.14	400kV THP - Siliguri Line- IV	126.98	
		Unit- IV	0.00	400kV THP - Malbase Line - III	188.21	
		Unit- V	117.81	400kV Malbase - Siliguri Line	114.95	
		Unit- VI	149.40	-	-	
		<b>Total</b>	<b>584.29</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.36%</b>	
2	720MW MHP	Unit-I	109.78	400kV MHP - Jigmeling Line - I	126.30	MHP Unit- IV under shutdown. 400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmo line I not in service. 400kV JLG_ALI Line II (Interim & Direct) on Standby.
		Unit-II	100.20	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	110.27	400kV MHP - Jigmeling Line - III	127.25	
		Unit-IV	0.00	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	64.23	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	41.30	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	83.42	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	125.68	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	0.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	13.10	
		-	-	80MVA, 220/132kV ICT - II (HV)	13.40	
		-	-	220kV Tsirang - Jigmeling Line	45.62	
		-	-	132kV Gelephu - Salakati Line	15.02	
<b>Total</b>	<b>320.25</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.77%</b>			
3	336MW CHP	Unit- I	75.39	220kV CHP - Birpara Line- I	46.47	66kV CHP-Chumdo Line under Shutdown.
		Unit- II	77.22	220kV CHP - Birpara Line- II	46.29	
		Unit- III	75.13	220kV CHP - Malbase Line- III	88.70	
		Unit- IV	60.96	220kV CHP - Semtokha Line- IV	95.70	
		-	-	220kV Malbase - Birpara Line	7.78	
		-	-	66kV CHP - Chumdo Line	0.00	
		-	-	66kV CHP - Gedu Line	10.25	
		-	-	3x3MVA, 66/11kV TFR	1.20	
<b>Total</b>	<b>288.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.03%</b>			
4	24MW BHP (U/S)	Unit- I	8.90	220kV BHP - Semtokha Line	35.40	
		Unit- II	8.60	66kV BHP - Lobeysa Line	24.98	
		<b>Total</b>	<b>17.50</b>	220kV BHP - Tsirang Line	-11.19	
5	40MW BHP (L/S)	Unit- I	16.00	5MVA, 66/11kV TFR	0.38	
		Unit- II	16.00	30MVA ICT, 220/66kV (HV)	8.25	
		<b>Total</b>	<b>32.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.14%</b>	
6	126MW DHP	Unit-I	0.00	220kV DHP - Tsirang Line	58.67	Unit-I standby. 220kV DHP_DAG Line on Standby.
		Unit-II	58.98	220kV DHP - Dagapela Line	0.00	
		-	-	220kV Jigmeling - Dagapela Line	61.30	
		-	-	5MVA, 220/33kV TFR	0.31	
<b>Total</b>	<b>58.98</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.00%</b>			
7	60MW KHP	Unit- I	14.17	132kV KHP - Nangkhon Line	34.84	
		Unit-II	14.21	132kV KHP - Kilikhar Line	20.87	
		Unit- III	14.18	5MVA, 132/11kV TFR	0.50	
		Unit- IV	14.21	132kV Motanga - Rangia Line	24.63	
		<b>Total</b>	<b>56.77</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.99%</b>	

**Note: Generation-Load Summary (MW) for October 23, 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	981.47	393.52	385.56	603.63	7.96
2	Eastern Grid	377.02	112.59	109.56	248.75	3.03
<b>Total</b>		<b>1,358.49</b>	<b>506.11</b>	<b>495.12</b>	<b>852.38</b>	<b>10.99</b>

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1	Western Grid	1,670.22	286.04	276.70	1,279.25	9.34
2	Eastern Grid	501.62	66.55	63.48	540.00	3.07
<b>Total</b>		<b>2,171.84</b>	<b>352.59</b>	<b>340.18</b>	<b>1,819.25</b>	<b>12.41</b>

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  - 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.
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