

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

**Coincidental Maximum Load**

**Date:** August 21, 2022  
**Hours:** 19:00 Hours

**Date**      **Time**      **Load(MW)**  
 15-Aug-22      19:30 hrs      521.02

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	186.09	400kV THP - Siliguri Line - I	0.00	400kV THP_ Siliguri Line I under breakdown
		Unit- II	185.44	400kV THP - Siliguri Line - II	313.08	
		Unit- III	99.04	400kV THP - Siliguri Line- IV	301.15	
		Unit- IV	147.31	400kV THP - Malbase Line - III	329.07	
		Unit- V	147.01	400kV Malbase - Siliguri Line	290.99	
		Unit- VI	185.30	-	-	
		<b>Total</b>	<b>950.19</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.73%</b>	
2	720MW MHP	Unit-I	159.83	400kV MHP - Jigmeling Line - I	302.35	400kV MHP-JLG Line II on Standby. 400kV MHP-JLG Line IV under breakdown. 132kV MHP_Yurmo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	159.73	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.40	400kV MHP - Jigmeling Line - III	304.24	
		Unit-IV	155.69	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)	61.14	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	134.98	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	201.29	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	202.05	
		-	-	80MVA, 220/132kV ICT - I (HV)	40.77	
		-	-	80MVA, 220/132kV ICT - II (HV)	41.55	
		-	-	220kV Tsirang - Jigmeling Line	8.60	
-	-	132kV Gelephu - Salakati Line	15.78			
<b>Total</b>	<b>610.65</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.66%</b>			
3	336MW CHP	Unit- I	91.68	220kV CHP - Birpara Line- I	115.51	220kV MAL_Birpara Line under breakdown.
		Unit- II	91.08	220kV CHP - Birpara Line- II	115.84	
		Unit- III	91.72	220kV CHP - Malbase Line- III	14.36	
		Unit- IV	71.51	220kV CHP - Semtokha Line- IV	79.73	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	15.50	
		-	-	66kV CHP - Gedu Line	3.39	
		-	-	3x3MVA, 66/11kV TFR	1.40	
		<b>Total</b>	<b>345.99</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.08%</b>	
4	24MW BHP (U/S)	Unit- I	11.00	220kV BHP - Semtokha Line	23.90	
		Unit- II	10.70	66kV BHP - Lobeysa Line	25.06	
		<b>Total</b>	<b>21.70</b>	220kV BHP - Tsirang Line	10.09	
5	40MW BHP (L/S)	Unit- I	19.40	5MVA, 66/11kV TFR	0.68	
		Unit- II	19.40	30MVA ICT, 220/66kV (HV)	1.55	
		<b>Total</b>	<b>38.80</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.27%</b>	
6	126MW DHP	Unit-I	35.34	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	34.01	220kV DHP - Dagapela Line	68.84	
		-	-	220kV Jigmeling - Dagapela Line	-13.29	
		-	-	5MVA, 220/33kV TFR	0.40	
<b>Total</b>	<b>69.35</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.16%</b>			
7	60MW KHP	Unit- I	16.54	132kV KHP - Nangkhon Line	36.51	
		Unit-II	16.55	132kV KHP - Kilikhar Line	28.43	
		Unit- III	16.58	5MVA, 132/11kV TFR	0.60	
		Unit- IV	16.63	132kV Motanga - Rangia Line	38.21	
		<b>Total</b>	<b>66.30</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>1.15%</b>	

**Note: Generation-Load Summary (MW) for August 21, 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	1,426.03	267.57	259.54	1,136.57	8.03
2	Eastern Grid	676.95	106.53	101.71	592.31	4.82
<b>Total</b>		<b>2,102.98</b>	<b>374.10</b>	<b>361.25</b>	<b>1,728.88</b>	<b>12.85</b>

**Note: Generation-Load Summary for August 21, 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	1,671.40	281.24	270.93	1,287.96	10.31
2	Eastern Grid	840.66	95.80	78.77	847.06	17.03
<b>Total</b>		<b>2,512.06</b>	<b>377.04</b>	<b>349.70</b>	<b>2,135.02</b>	<b>27.34</b>

**NOTE-**

- 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:** August 22, 2022  
**Hours:** 09:00 Hours

**Date**      **Time**      **Load(MW)**  
 15-Aug-22      19:30 hrs      521.02

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.74	400kV THP - Siliguri Line - I	0.00	400kV THP_Siliguri Line I under breakdown.
		Unit- II	184.29	400kV THP - Siliguri Line - II	371.92	
		Unit- III	186.03	400kV THP - Siliguri Line- IV	357.00	
		Unit- IV	185.69	400kV THP - Malbase Line - III	374.22	
		Unit- V	183.53	400kV Malbase - Siliguri Line	348.13	
		Unit- VI	185.93	-	-	
		<b>Total</b>	<b>1,111.21</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.73%</b>	
2	720MW MHP	Unit-I	197.83	400kV MHP - Jigmeling Line - I	361.10	400kV MHP-JLG Line II under standby and IV under breakdown. 132kV MHP_Yurmoo line I & II not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	197.78	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.35	400kV MHP - Jigmeling Line - III	363.09	
		Unit-IV	197.81	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)	47.07	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	167.31	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	250.25	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	250.74	
		-	-	80MVA, 220/132kV ICT - I (HV)	34.31	
		-	-	80MVA, 220/132kV ICT - II (HV)	34.90	
		-	-	220kV Tsirang - Jigmeling Line	1.17	
-	-	132kV Gelephu - Salakati Line	9.07			
<b>Total</b>	<b>728.77</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.63%</b>			
3	336MW CHP	Unit- I	91.87	220kV CHP - Birpara Line- I	111.12	220kV MAL_BIR line under breakdown.
		Unit- II	90.84	220kV CHP - Birpara Line- II	111.15	
		Unit- III	91.54	220kV CHP - Malbase Line- III	42.85	
		Unit- IV	71.76	220kV CHP - Semtokha Line- IV	62.35	
		-	-	220kV Malbase - Birpara Line	0.00	
		-	-	66kV CHP - Chumdo Line	12.20	
		-	-	66kV CHP - Gedu Line	4.35	
		-	-	3x3MVA, 66/11kV TFR	0.92	
<b>Total</b>	<b>346.01</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.31%</b>			
4	24MW BHP (U/S)	Unit- I	10.90	220kV BHP - Semtokha Line	14.67	
		Unit- II	10.60	66kV BHP - Lobeyssa Line	22.10	
		<b>Total</b>	<b>21.50</b>	220kV BHP - Tsirang Line	22.13	
5	40MW BHP (L/S)	Unit- I	19.90	5MVA, 66/11kV TFR	0.45	
		Unit- II	19.40	30MVA ICT, 220/66kV (HV)	3.80	
		<b>Total</b>	<b>39.30</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>2.38%</b>	
6	126MW DHP	Unit-I	38.38	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	38.02	220kV DHP - Dagapela Line	75.91	
		-	-	220kV Jigmeling - Dagapela Line	-21.22	
		-	-	5MVA, 220/33kV TFR	0.45	
<b>Total</b>	<b>76.40</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.05%</b>			
7	60MW KHP	Unit- I	16.48	132kV KHP - Nangkhoh Line	40.74	
		Unit-II	16.53	132kV KHP - Kilikhar Line	24.45	
		Unit- III	16.57	5MVA, 132/11kV TFR	0.35	
		Unit- IV	16.59	132kV Motanga - Rangia Line	37.81	
		<b>Total</b>	<b>66.17</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.95%</b>	

**Note: Generation-Load Summary (MW) for August 22, 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	1,594.42	272.71	262.08	1,299.32	10.63
2	Eastern Grid	794.94	102.15	96.94	715.18	5.21
<b>Total</b>		<b>2,389.36</b>	<b>374.86</b>	<b>359.02</b>	<b>2,014.50</b>	<b>15.84</b>

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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	1,669.56	273.54	263.25	1,292.83	10.29
2	Eastern Grid	848.28	77.59	73.56	873.88	4.03
<b>Total</b>		<b>2,517.84</b>	<b>351.13</b>	<b>336.81</b>	<b>2,166.71</b>	<b>14.32</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.